CN2510 Async Server

User's Manual

www.moxa.com/product

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Introduction

Welcome to Moxa CN2510 Async Server, a communication server with 4/8/16 asynchronous RS-232 ports and one 10/100 Mbps Ethernet LAN port. CN2510 Async Server can be used to connect terminals, modems, printers, and other asynchronous serial devices to LAN hosts. CN2510 complies with TCP/IP and IEEE 802.3 specifications using standard Ethernet 10/100BaseT and twisted pair 10/100BaseTX cable as the physical medium.

The following topics are covered in this chapter:

- **Product Features**
  - Hardware
  - Software
- **Package Checklist**
- **Front Panel**
- **Rear Panel**
- **Bottom Label**

Product Features

Hardware

- 1 LAN ports (Ethernet auto-detection 10/100 Mbps)
- Surge protection for each serial port
- 4 MB RAM, 2 MB Flash ROM
- Tx/Rx LED for each serial port
- System Status LEDs
- 8 or 16 RJ45 RS-232 serial ports, with up to 230.4 Kbps speed

Software

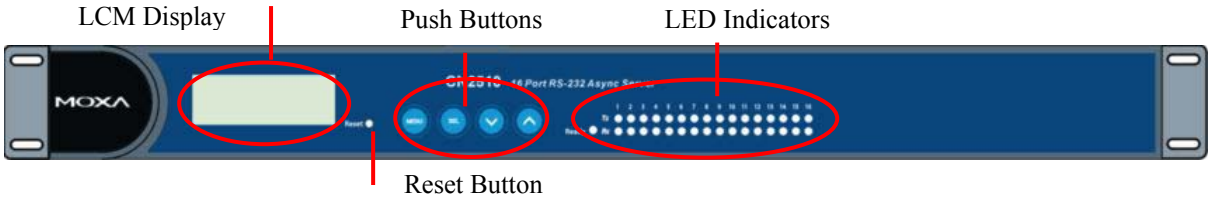
- ASCII/Binary terminal modes with max. of 8 Telnet and Rlogin sessions
- Supports Point to Point Protocol (PPP and PPPD)
- Supports Serial Line Internet Protocols (SLIP and SLIPD)
- Dynamic auto-recognition of Terminal, SLIP or PPP
- Supports Dial-on-demand, Dial-out
- Remote serial printing (RLP)
- CN2510 Async Server Proprietary Protocol (ASPP) for TCP/IP socket programming
- RAW mode for transparent data transmission
- Reverse Telnet
- SNMP Agent for network management
- Network protocols: TCP/IP, UDP, ICMP, NetBEUI, DHCP
- Application protocols: Telnet, Rlogin, Rtelnet, RAW TCP, RAW UDP, RCP, WINS, LPD, DNS, Multi-Host
- Security protocols: RADIUS, Dial-back, PAP, CHAP, Local user / password
- Real COM port driver for Windows 95/98/ME/NT/2000/XP/2003
- Fixed TTY: SCO Open Server5, SCO UnixWare 7, Linux 2.2.x, Linux 2.4.x
- Static Routing, RIP I/II protocols
- Windows-like administrative CONSOLE utility from a fixed console port, or by Telnet from a networked host
- Password protection and extensive user accounting functions
- Easy firmware upgrade via Flash ROM

Package Checklist

CN2510 Async Server products are shipped with the following items:

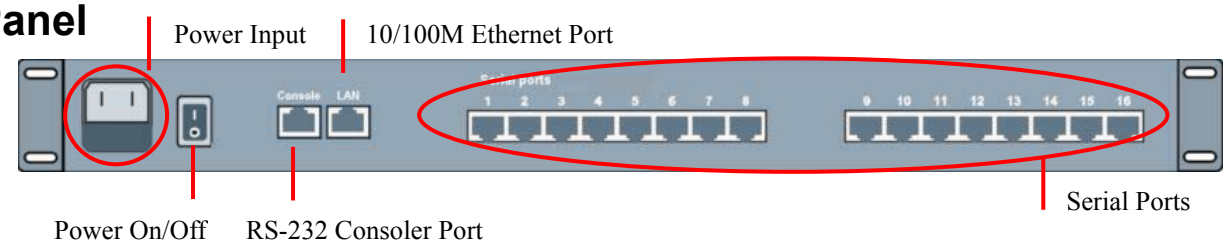
- 1 CN2510 Async Server
- 1 AC power Cord (for AC Model only)
- 1 Documentation and Software CD-ROM
- Quick Installation Guide (English and Simplified Chinese)
- 1 RJ45 Loopback Tester
- Product Warranty Booklet
- Rackmount kit including 2 brackets and 8 screws
- Desktop kit including 4 pads

Front Panel



LED	Color	Description
Reset	None	If you forget the password, press this button for 5 seconds, then the password will be removed.
Ready	Red	Displays CN2510 system is powered on
Ready	Green	Displays CN2510 system is ready
Serial Tx	Green	Displays serial port transmission
Serial Rx	Yellow	Displays serial port reception

Rear Panel



Connector	Function
AC Power Input	Automatic detection of 100-240V, 47-63Hz AC power supply (CN2510-16 or CN2510-8) Automatic detection of 12-48VDC, 1.01A at 12V, 240 mA at 48V DC power supply (CN2510-16-48V or CN2510-8-48V)
Power On/Off Switch	I indicates power on; O indicates power off (for AC Model only)
RS-232 Console Port	One RJ45 female connector for console terminal connection
LAN	Auto detection for 10/100 Mbps UTP connection
Serial Ports	One RJ45 male connector for DCE modem connection

Bottom Label

The server's serial number and MAC address is printed on a label fixed to the bottom of the server. CN2510 has 1 LAN ports, 1 MAC addresses. The MAC address is the unique hardware Ethernet address used to identify a network hardware product. Please write the number down here for later reference.

LAN 1 MAC address:_____

2

Getting Started

This chapter includes instructions on where and how to install CN2510 Async Server, and discusses both basic and advanced software configuration.

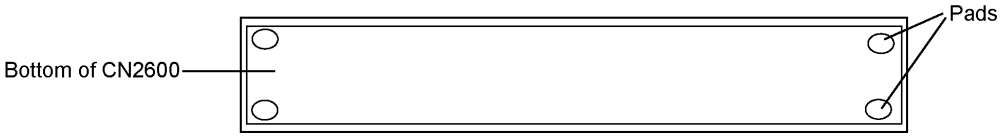
The following topics are covered:

- **Hardware Installation**
  - Desktop
  - Rackmount
  - Wiring Requirements
  - Connecting CN2510-8/16's Power
  - Connecting CN2510-8/16-48V's Power
  - Grounding CN2510-8/16-48V
  - Connecting to the Network
  - Connecting to a Serial Device
  - Connecting to a Console
- **Entering Console Utility**
  - Configuration Checklist
  - Entering Console via Telnet Terminal
  - Run Telnet Program
  - Entering Console via Console Terminal
  - Basic Server Configuration I
  - Basic Server Configuration II
  - Advanced Server Configuration
- **Save**
- **Restart**

Hardware Installation

Desktop

Place your CN2510 on a clean, flat, well-ventilated desktop. For better ventilation, attach the 4 pads from the desktop kit to the bottom of the unit, and leave some space between the CN2510 and other equipment. Do not place equipment or objects on top of the unit, as this might damage the server.



Rackmount

CN2510 is designed to be mountable in a standard 19-inch rack. Use the enclosed pair of L-shaped metal plates and screws to fasten your CN2510 to the rack cabinet. There are two options. You can lock either the front or rear panel of the CN2510 to the front of the rack. Each L-shaped plate has 6 holes, leaving two outer or inner holes open for your convenience.

Wiring Requirements

ATTENTION

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your CN2510.

Wiring Caution!

ATTENTION

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

ATTENTION

Temperature Caution!

Please take care when handling CN2510. When plugged in, CN2510's internal components generate heat, and consequently the casing may feel hot to the touch.

You should also pay attention to the following points:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

  NOTE: Do not run signal or communication wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

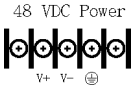
- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- Where necessary, it is strongly advised that you label wiring to all devices in the system.

Connecting CN2510-8/16's Power

Connect CN2510 100-240 VAC power line with its AC connector. If the power is properly supplied, the "Ready" LED will show a solid red color until the system is ready, at which time the "Ready" LED will change to a green color.

Connecting CN2510-8/16-48V's Power

To connect CN2510-8/16-48V's power cord with its terminal block, follow the steps given below:



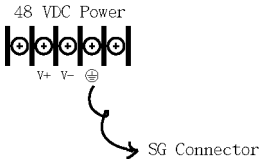
1. Loosen the screws on the V_+ and V_- terminals of CN2510-8/16-48V's terminal block.
2. Connect the power cord's 48 VDC wire to the terminal block's V_+ terminal, and the power cord's DC Power Ground wire to the terminal block's V_- terminal, and then tighten the terminal block screws. (Note: CN2510-8/16-48V can still operate even if the DC 48V and DC Power Ground are reversed.)

If the power is properly supplied, the "Ready" LED will show a solid red color until the system is ready, at which time the "Ready" LED will change to a green color.

NOTE You should use 8 kg-cm of screw torque and 22-14 AWG of suitable electric wire to connect CN2510-8/16-48V's power cord to its terminal block.

Grounding CN2510-8/16-48V

Grounding and wire routing helps limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.



The Shielded Ground (sometimes called Protected Ground) contact is the second contact from the right of the 5-pin power terminal block connector located on the rear panel of CN2510-8/16-48V. Connect the SG wire to the Earth ground.

ATTENTION

This product is intended to be mounted to a well-grounded mounting surface such as a metal panel.

Connecting to the Network

Connect one end of the Ethernet cable to CN2510's 10/100M Ethernet port and the other end of the cable to the Ethernet network. There are 2 LED indicators located on the bottom left and right corners of the Ethernet connector. If the cable is properly connected, CN2510 will indicate a valid connection to the Ethernet in the following ways:

The bottom right corner LED indicator maintains a solid green color when the cable is properly connected to a 100 Mbps Ethernet network.

The bottom left corner LED indicator maintains a solid orange color when the cable is properly connected to a 10 Mbps Ethernet network.

Connecting to a Serial Device

Connect the serial data cable between CN2510 and the serial device.

Connecting to the Console Port

A console is a combination of keyboard and monitor, and is used to configure settings and to monitor the status of your system. If you do not have a network environment, use a terminal, a PC running UNIX, or a PC with terminal emulation software (e.g., HyperTerminal in Windows; PComm by Moxa, parameters setting as baud rate: 115200bps, parity check: None, data bit: 8, stop bit 1, terminal type: VT100). Use an RJ45-to-DB25 or to DB9 cable to connect the terminal to the console socket.

Entering Console Utility

Console Utility is the main application needed to set up the server/port configuration, and to execute utilities such as ping, diagnosis, monitor, and upgrade. There are two ways to enter Console Utility. One is to use terminal emulation through a console terminal, and the other is to telnet from a network terminal.

NOTE There are two ways to enter Console Utility. If your network is already setup, you can use Windows utility to find and then telnet to CN2510's IP address. If your network environment is not setup yet, you should use Moxa PComm Terminal to establish a direct console connection.

Configuration Checklist

Complete the following information table before entering Console Utility to configure your CN2510. Check with your network administrator if you do not know all of the required information.

Basic Information for CN2510

Name	
Location	
LAN1 IP address	
LAN1 IP netmask	
LAN1 default gateway IP address	
Domain server 1 IP address	
Domain server 2 IP address	
WINS server IP address	
Console password	

Entering Console via Telnet Terminal

Properly connect CN2510 to your LAN and then turn on the power. Use Moxa Windows Utility to find CN2510's IP address, and then telnet to the IP address to enter the CN2510 console.

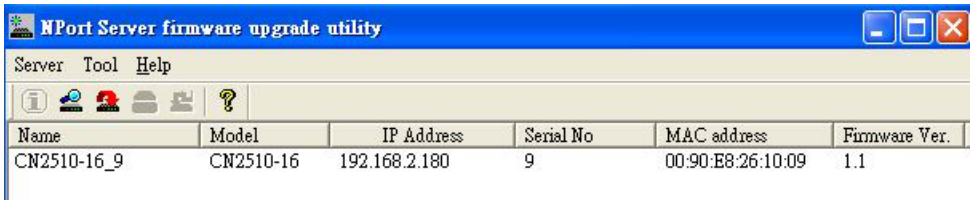
CN2510 Windows Utility

CN2510 Utility is a convenient Windows utility that can be used to find both the name and IP address of your CN2510. You can then telnet the server to complete the configuration process and to gather information about all servers on the network.

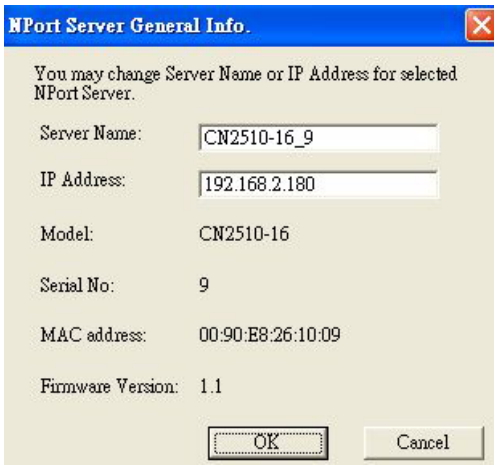
1. Run **upgrade.exe**, located on the CN2510 CD. \Software\Firmware\upgrade.exe

2. CN2510 Utility starts searching for all CN2510s on the network.

3. CN2510 Utility lists all available servers on the network. Note that servers in gray are password protected. Double click the server in black, or click on  from the menu bar to see the server settings.



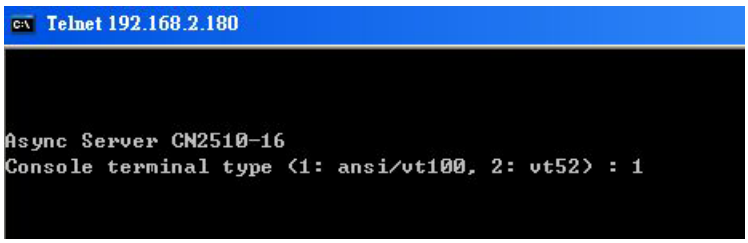
4. The server's general information is shown below. If necessary, change the settings (e.g. server IP address as 192.168.205.21), and then click **OK** to accept the configuration.



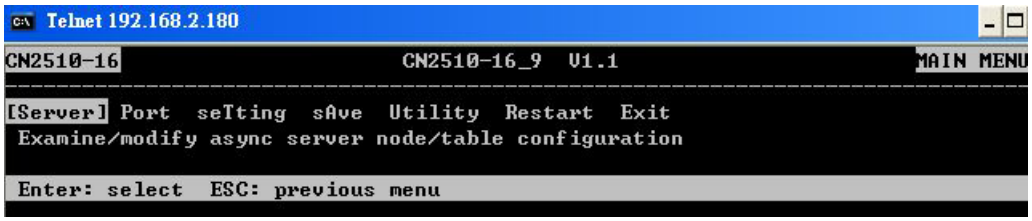
5. If you can't find the server in the list, double-check the server's power and network connections, and then use search  to try locating the server again.

Run a Telnet Program

1. Telnet over the network to the server's IP address. Choose **ansi/vt100** and press **Enter**



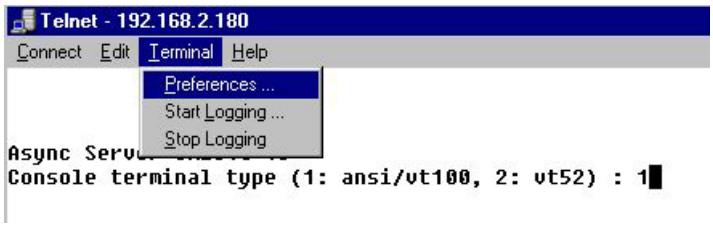
2. CN2510's **MAIN MENU** is shown below.

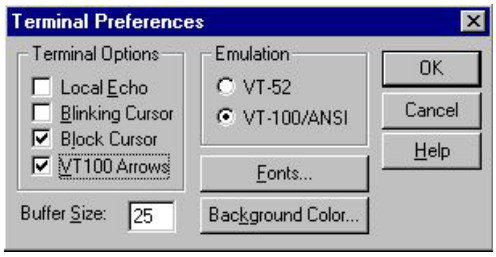


3. Familiarize yourself with the cursor movement functions before starting the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

NOTE If you have problems using the arrow keys to move the cursor, click on the Terminal menu, choose Preferences, and then select VT100 Arrows in the Terminal Preferences window. Press OK to go back to the Main Menu, and then it can work properly now.

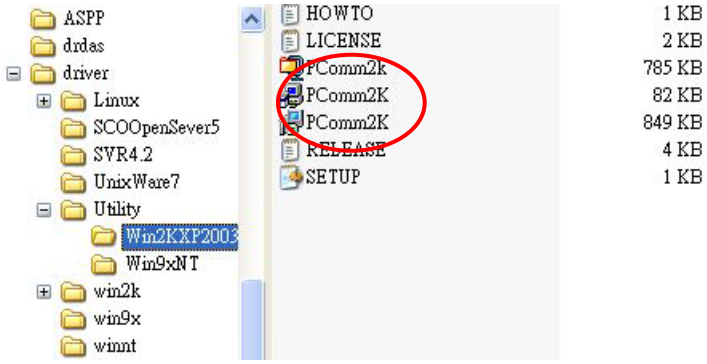




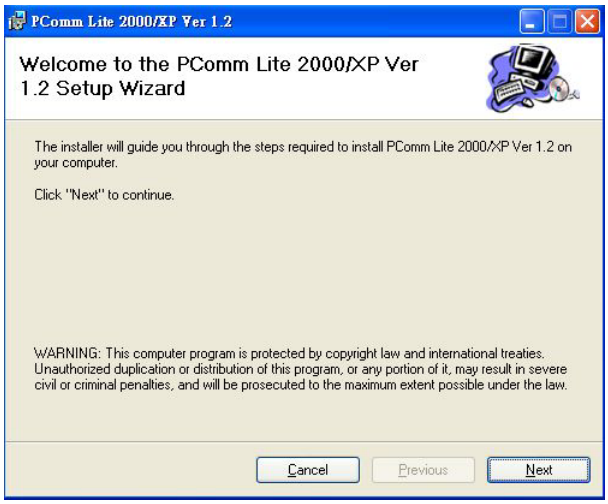
Entering Console via Console Terminal

If you do not know the CN2510's IP address, or it is not possible to use Telnet, you can instead use a direct console connection to enter the CN2510 console. First find a terminal emulation program for the console PC, such as HyperTerminal, which provides terminal emulation programs for Windows. However, we recommend using Moxa PComm Terminal Emulator, which is included on the CN2510 CD. You simply need to run the **pcterm.exe** program.

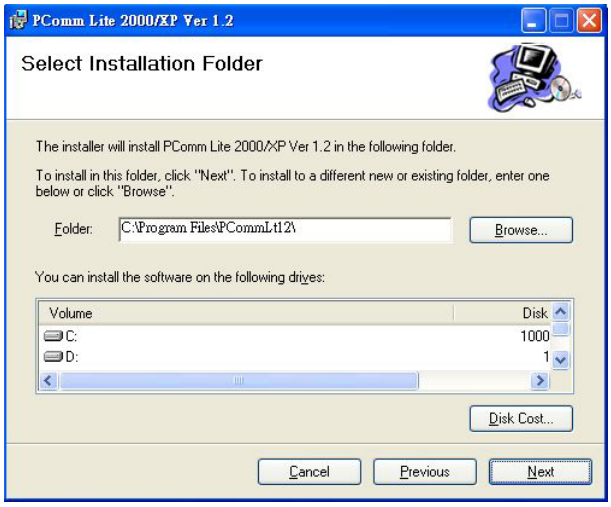
1. If you are using Windows 9x/ME/NT, run **PComm26.exe** from the directory of Win9xNT. If you are using Windows 2000/XP/2003, run **PComm2K.exe** from the directory of Win2kXP2003.



2. Click on **Next** to Continue.



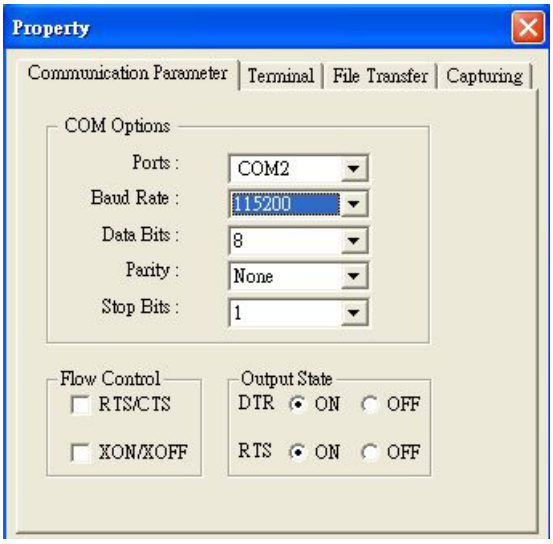
3. Select a directory in which to install CN2510 Utility and click on **Next** to accept. Then click on **Next** again to confirm and start.



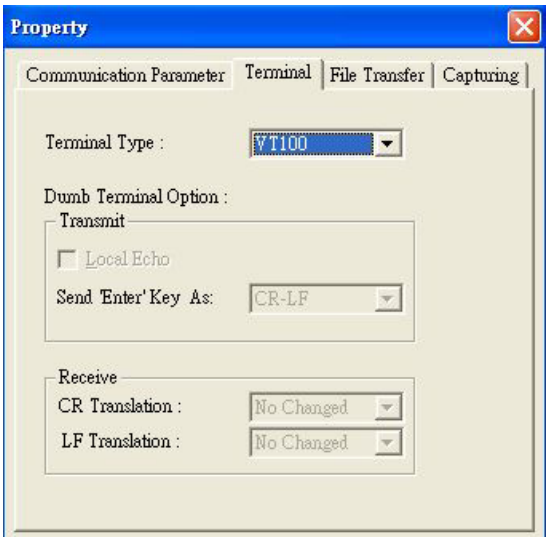
4. When the installation is complete, run **Start→Programs→PComm Terminal Emulator**.

5. Use an RJ45 to DB25 female cable to connect to the CN2510 console port. Turn on CN2510, start PComm Terminal, and then open a new connection by clicking on the icon indicated below.

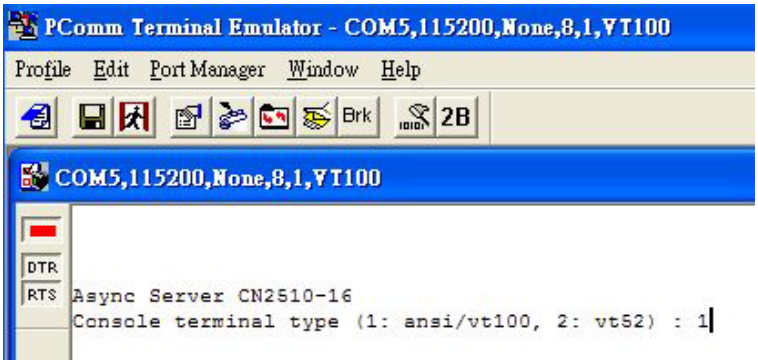
6. In **Communication Parameter**, select **COM2** for console connection, **115200** for Baud Rate, **8** for Data Bits, **None** for Parity, and **1** for Stop Bits.



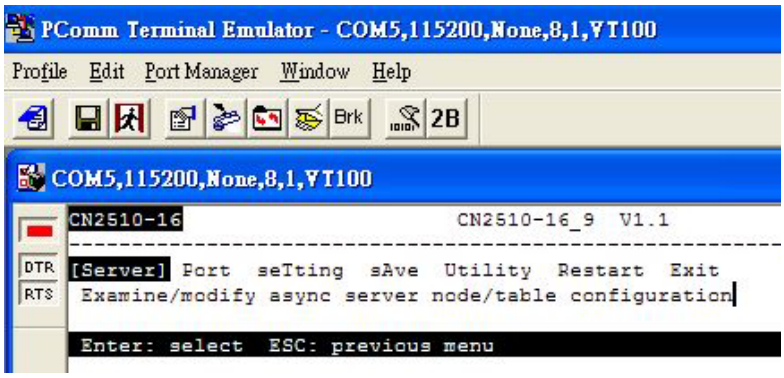
7. In **Terminal**, select **VT100** for terminal type. Press **Enter** to confirm.



8. Type 1 to select **ansi/VT100** terminal type, and press **Enter** to enter **MAIN MENU**.



9. You may use **Edit → Font** to choose a different font display for **MAIN MENU**.



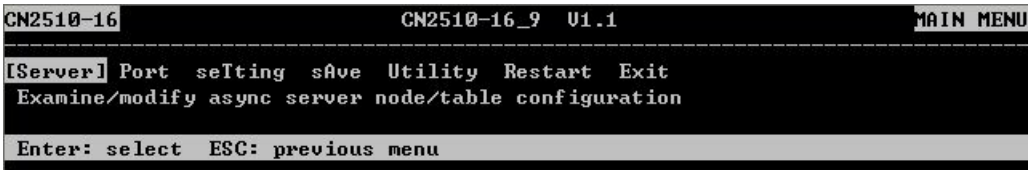
10. After entering CN2510's **MAIN MENU**, use the following keys to move and select. Familiarize yourself with these cursor movement functions before we start the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

Basic Server Configuration

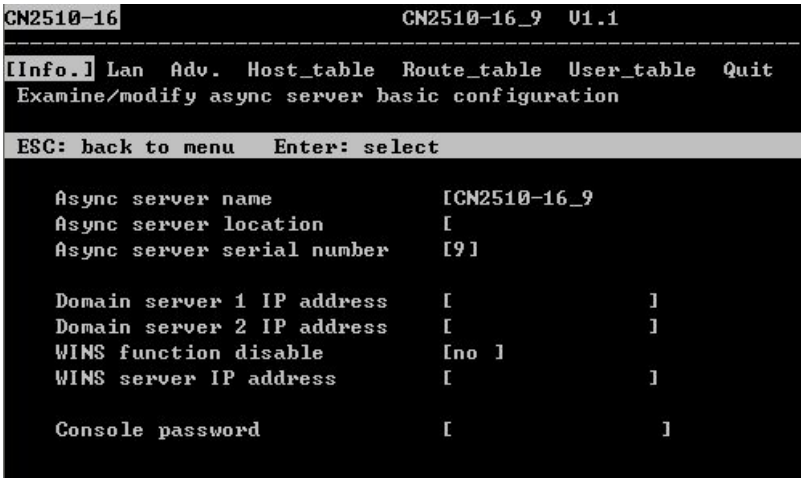
After learning how to enter Console Utility and CN2510 Utility, you can start to configure basic information for your CN2510. First enter Console Utility by either using a console terminal or Telnet terminal, as illustrated earlier in this chapter.

1. In **MAIN MENU**, use the arrow keys to select **Server**, and then press **Enter**.



2. In **SERVER MENU**, select **Info.**, and then press **Enter**.

3. In **Info.**, you must change the name, IP address, netmask, and any other information on your checklist (use the arrow keys to move the cursor). Press **Esc** to return to **SERVER MENU**.



Async server name-This field contains the name of this CN2510. CN2510 uses this name to identify itself when requested by an SNMP station or UNIX host. The name should be an ASCII string with length no more than 40 characters. Spaces are allowed.

Async server location-This field contains the location of this CN2510. CN2510 will report this location to the SNMP station when requested. The name should be an ASCII string with length no more than 44 characters. Spaces are allowed.

Async server serial number-Each CN2510 Async Server has its own unique serial number.

Domain server 1/2 IP address-A Domain Name Server is a network host that contains information about host name to IP address translations. One host can request another host's address from the Domain Name Server. The two fields contain the IP address of the primary and secondary Domain Name Server. When a user tries to make a connection, CN2510 first checks the host table defined in [Host] menu. If there is no matching entry, CN2510 sends a query to the Domain Name Server.

WINS function disable-to enable WINS server or disable WINS server. The default setting is "enable".

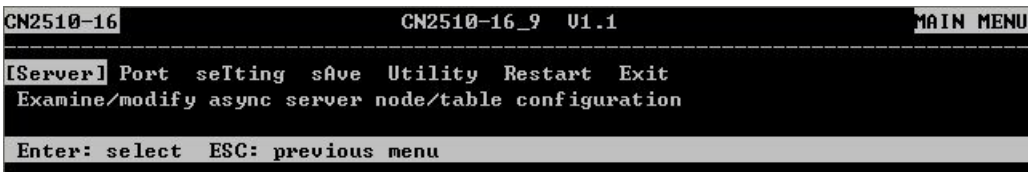
WINS server IP address-The WINS (Windows Name Server) Server contains a dynamic database to map computer names to IP addresses. Microsoft Windows computers can send name resolution to the WINS server. WINS makes use of NetBIOS over TCP/IP mode of operation. Although TCP/IP protocol software uses IP addresses, users use symbolic names, such as computer names, to identify the computers on the network. If there is a WINS Server in the network, this field can assign an IP address to it.

Console password-If you specify a password, you will need to enter it every time you want to use Console Utility. Write down the password. If you accidentally lose it, you will need to use the reset password button to reset it. You should only use the console password when absolutely necessary.

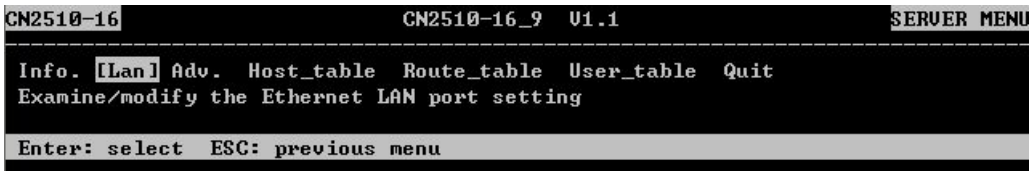
NOTE Write your console password in a safe place before setting it.

Basic Server Configuration II

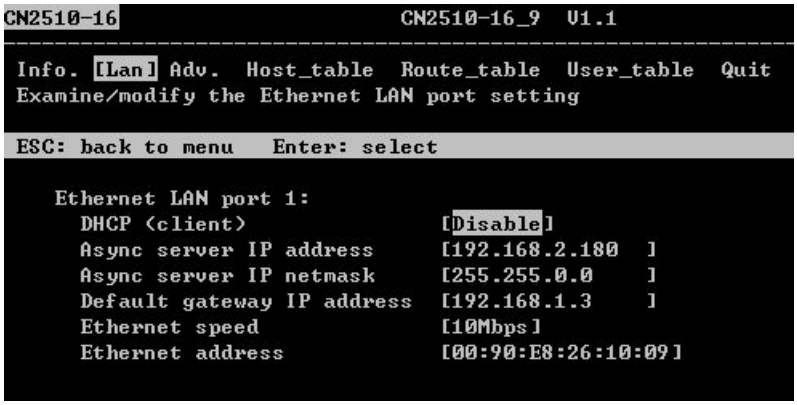
1. In **MAIN MENU**, use the arrow keys to select **Server**, and then press **Enter**.



2. In **SERVER MENU**, select **Lan**, and then press **Enter**.



3. In **Lan**, you must change the IP address, netmask, and any other information on your checklist (use the arrow keys to move the cursor). Press **Esc** to return to **SERVER MENU**.



Ethernet LAN port 1:

DHCP (client)-to enable or disable DHCP function. When DHCP is enabled, CN2510 will initiate the connection with the DHCP Server over the network, and the DHCP Server will assign an available IP address and Netmask to CN2510 LAN1. If there is no available IP address, CN2510 LAN1 will use the original IP address, and keep sending request to the DHCP Server.

Async server IP address-this field MUST contain an IP address unique to the network. The IP address is written using the notation "ddd.ddd.ddd.ddd", in which each 'ddd' is a nonnegative decimal number less than 256 (i.e., an 8-bit integer). The default value is 192.168.127.254.

Async server IP netmask-This field contains the server Ethernet IP network mask pattern. 'Blank' means the network mask depends on IP address classes. For example, if the IP address is 192.168.127.254, belonging to class C (please refer to Appendix C), the network mask should be set to 255.255.255.0.

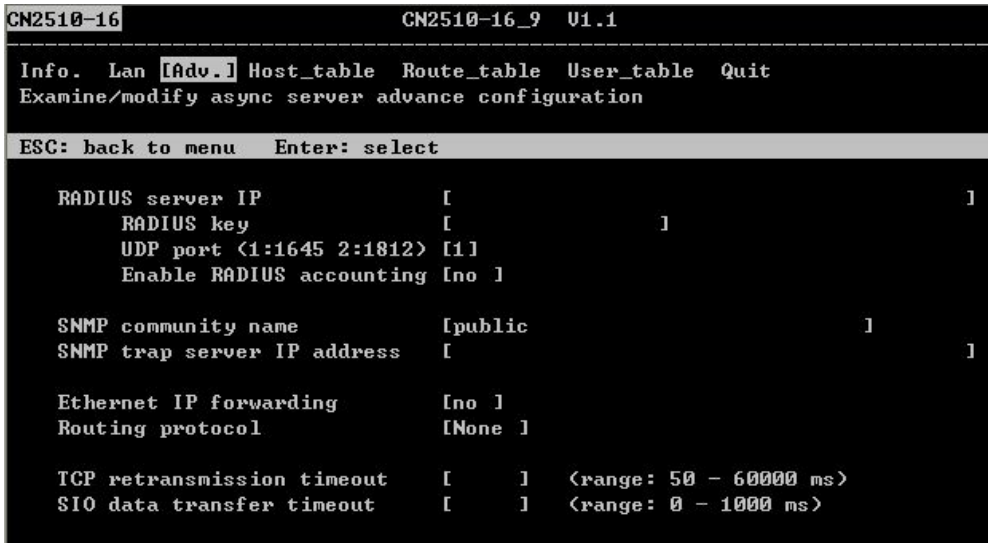
Default gateway IP address-This field is the IP address of a router on the local network. The default gateway is used when a packet is sent to an IP address that is not on the local network and not specified in CN2510's local routing table.

Ethernet speed-The Ethernet interface is 10BaseT or 100BaseT. Depending on the physical connection, the interface is selected automatically when the power is turned on, with the default set at 10BaseT. Modification of this field is not allowed.

Ethernet address-This field contains the hardware Ethernet address. Modification of this field is not allowed.

Advanced Server Configuration

If you have settings for RADIUS, SNMP, or Routing, select **Adv.** and press **Enter**.



RADIUS server IP-This field contains the IP address of the RADIUS server. RADIUS is short for Remote Authentication Dial-In User Service, and is used to authenticate remote dial-in users connecting from any ISP (Internet Service Provider). Skip this field if you do not have a RADIUS server on your network.

Windows NT includes RADIUS software. For UNIX-based platforms use the RADIUS software provided by Moxa (see the CN2510 CD). Please refer to Appendix B for more information.

NOTE The RADIUS server and CN2510 SHOULD be able to communicate. To verify this, make sure that the two servers can successfully ping each other.

RADIUS key-This is a shared key for RADIUS protocol. If you have a RADIUS server, you will have to create a password here.

UDP port (1:1645 2:1812)-Two choices are available for RADIUS UDP port numbers. The early deployment of RADIUS was done using port number 1645, but this later conflicted with the RFC standard. The officially assigned port number for RADIUS is now 1812. We recommend, however, that you use the old RADIUS server UDP port number of 1645, since many companies still use it. Check the UDP port number in your RADIUS server software to determine the proper choice.

Enable RADIUS accounting-The default for this field is `yes`. If your RADIUS Server does not offer this function, please set it to `No`.

SNMP community name-The SNMP community name can be used to guarantee minimal security for SNMP communication. Only SNMP stations with the same community name can access SNMP agents like Async Server. Choose a community name with no more than 16 ASCII characters. The default name is 'public'.

SNMP trap server IP address-This field specifies the IP address of the SNMP trap server. CN2510 will report to the SNMP trap server each time it restarts the unit. You may skip this if no SNMP is needed.

Ethernet IP forwarding-CN2510 is able to process forwarding packets between different segments within TCP/IP-based networks. When enabled, CN2510 will use its Ethernet routing ability to recognize an incoming packet that requires further forwarding action.

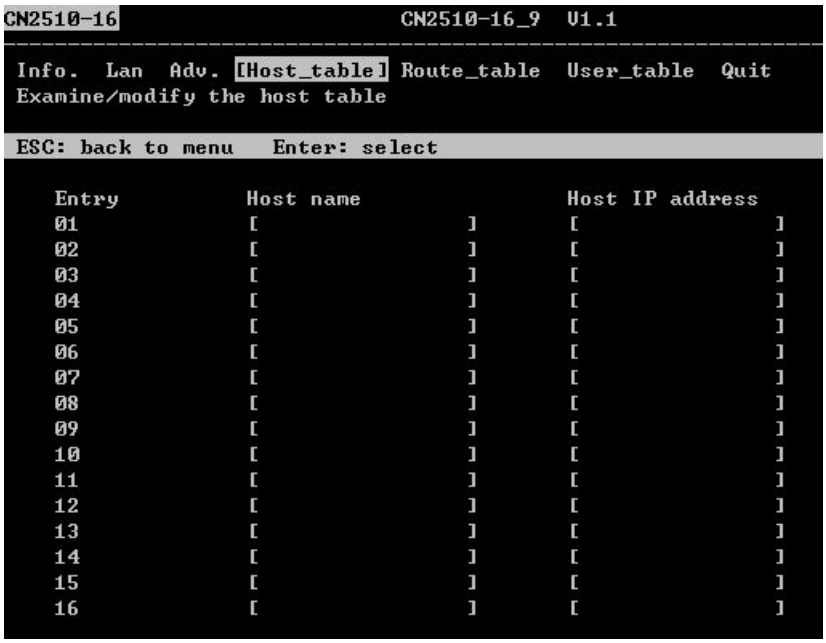
Routing protocol-CN2510 supports RIP (Routing Information Protocol) versions 1 and 2, a widely used protocol specifying how routers exchange routing table information. With RIP, routers (or CN2510s) periodically exchange entire tables.

TCP retransmission timeout-This field is used to control the time CN2510 waits to retransmit after a transmission failure occurs.

SIO data transfer timeout-This field defines the time CN2510 waits to send serial data to the Ethernet. The unit is milliseconds. Decreasing the timeout setting increases the efficiency.

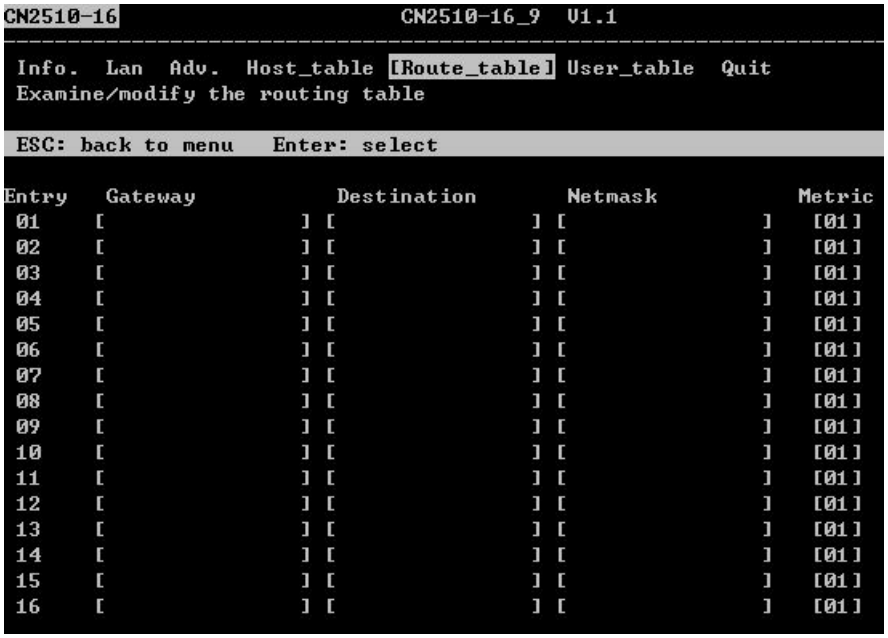
Host Table

The **Host_table** is used to edit frequently referred to host names and their corresponding IP addresses. The advantage is that you can easily refer to a host by name instead of by IP address. The host table can hold up to 16 [Host name]-[Host IP address] entries.



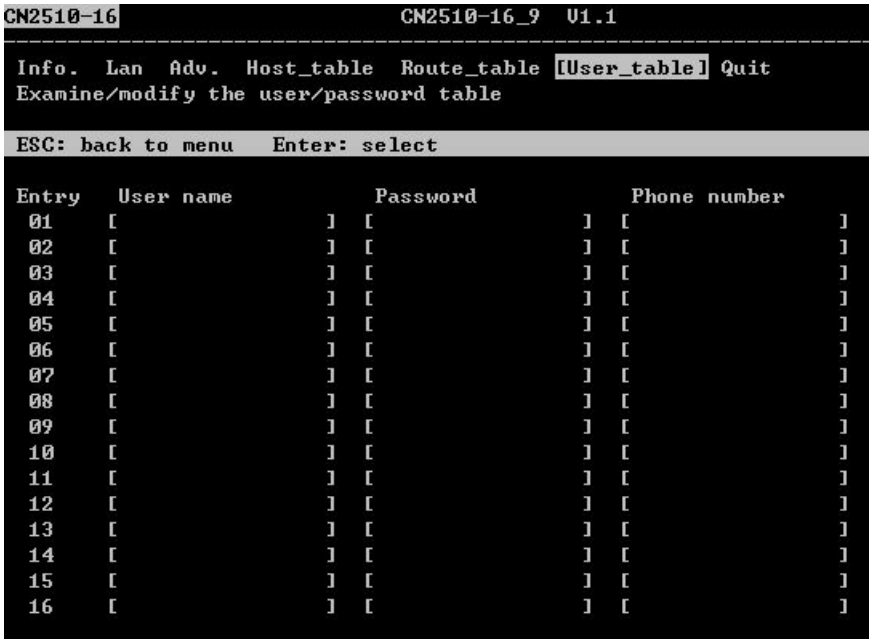
Route Table

The **Route_table** is designed to specify routing parameters. **Gateway** specifies the gateway IP address or the interface source IP address that data packets should be sent to. **Destination** specifies the IP address of a host or network that the route is connecting to. **Netmask** specifies the mask pattern of the destination network. **Metric** indicates the number of hops from source to the destination. Refer to chapter 14 for routing settings.



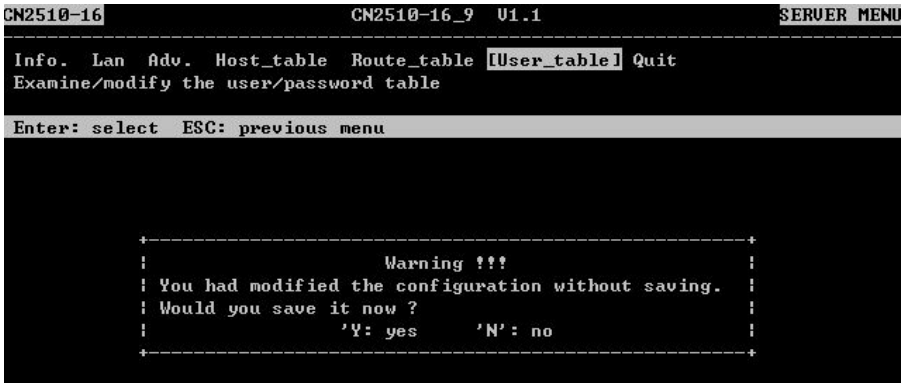
User Table

The **User_table** is used for local authentication in dial-in/out access. The CN2510 User Table, which holds information for up to 64 users, can be used if you do not have an external RADIUS server for authentication.

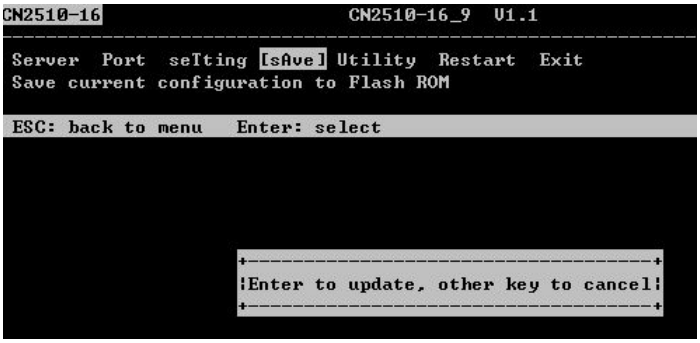


Save

1. Press **Y** to save previous settings when exiting **SERVER MENU**.

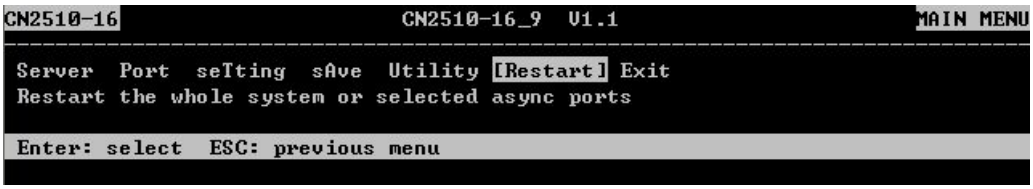


2. You may also save at a later time. In **MAIN MENU**, select **sAve** to save all changed settings, and then press **Enter** to confirm.



Restart

1. In **MAIN MENU**, select **Restart**.



2. Select **System** and then press **Enter** to continue.

3. The system will restart and the Telnet/Console session will terminate.

3

Knowing Your Application

This chapter discusses a variety of applications for CN2510 Async Server. Refer to the following diagrams to see which application matches your own. Determining your application will help you save time configuring both the hardware and software.

CN2510 is a Async Server that can multitask, supporting various operation modes for different serial ports. The examples in this chapter will explain each operation mode in details. Users can use a combination of various operation modes according to the nature of each application.

The operation modes written in the brackets after each application are actual operation modes used when configuring CN2510s. For example, the operation mode of Windows Real COM application is NT Real COM mode.

The following topics are covered:

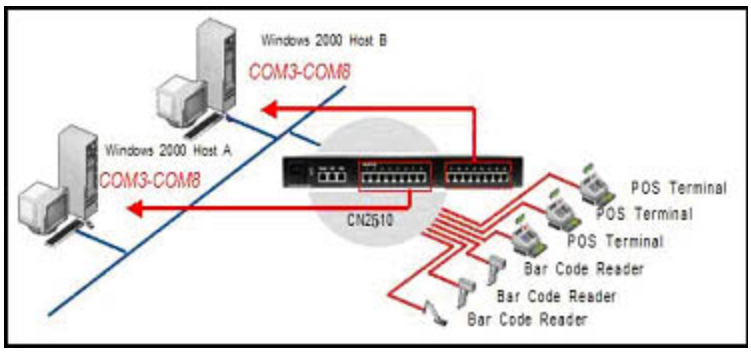
- **Windows Real COM/Linux Real TTY/Unix Fixed TTY (NT Real COM mode)**
- **Device Control (ASPP, RAW mode)**
- **UDP Communication (RAW UDP mode)**
- **Console Management (Rtelnet mode)**
- **Terminal Access (ASCII, BIN mode)**
- **Multi-host TTY (Fix TTY mode)**
- **Dial-in/out of Band Management (PPP/SLIP mode)**
- **Network Printer (RAW/LPD mode)**
- **Multiplexor Access (Term_BIN/Rtelnet mode)**

Windows Real COM (NT Real COM mode)

Moxa offers the COM port driver for the whole series of Windows to control Moxa CN2510 Async Server's serial ports. Through CN2510 Async Server, many applications which implemented serial boards can be enhanced to an Ethernet environment without modifying the software they are using right now. The original software can still be used to control COM3, COM4 and COM5.

By using the Real COM driver provided by Moxa, users can control and operate these serial ports as Windows' local Real COM ports.

CN2510's serial ports can be used by more than 1 PC as shown below. Refer to chapter 4 for more details about Windows Real COM port driver.



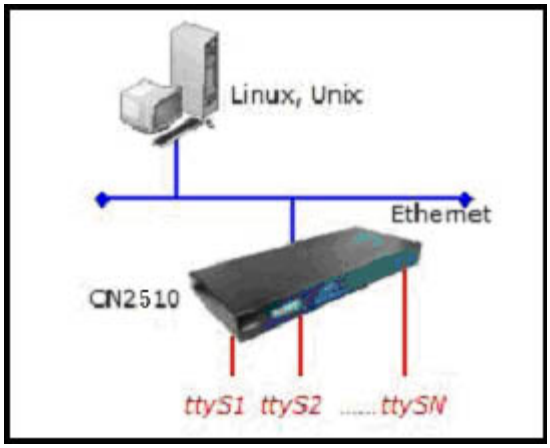
Linux Real TTY/Unix Fixed TTY (NT Real COM mode)

In the Linux environment, Moxa offers Real TTY port driver for serial ports, which allows you to easily control CN2510 Async Servers' serial ports. Through CN2510 Async Server, many applications which implemented serial boards can be enhanced to an Ethernet environment without modifying the software they are using right now. The original software can still be used to control TTYS0, TTYS1 and TTYS2.

By using the Real TTY driver provided by Moxa, users can control and operate these serial ports as Linux' local Real TTY ports. Refer to chapter 4 for more details about Linux Real TTY port driver.

In the Unix environment, Moxa offers Fixed TTY port driver. By using this software, users can use and operate CN2510s' serial port as Unix local TTY ports.

Compared with Unix Fixed TTY, the TTY ports installed by Linux Real TTY port driver can have better control over the data transmission of serial ports and modem signals, such as DTR, DSR, RTS, and CTS. Moxa offers Fixed TTY driver for Unix users. Fixed TTY driver can provide software reception and transmission function for serial ports. Compared to Real TTY, Fixed TTY cannot provide control ability over modem signals (DTR, DSR, RTS, and CTS).



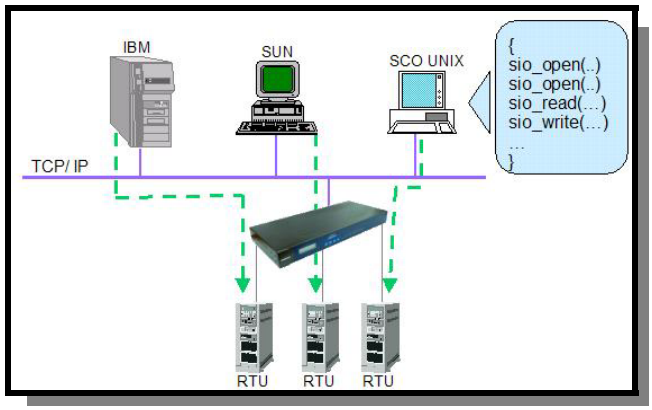
Device Control (ASPP, RAW mode)

For Device Control application, users can use standard Linux/Unix Socket programming in Linux/Unix or WinSock programming in the Windows environment to directly control devices' data transmission. In this application, users use the standard Socket programming to communicate with the CN2510, and the operation mode used is TCP RAW mode, focusing only on data transmission without serial port control or serial modem signals control. Users can also use ASPP protocol, exclusively provided by Moxa, to communicate with the CN2510.

Whether users use Linux/Unix Socket programming or Windows WinSock programming, IP is used as the communication agent between hosts and devices. The only difference is whether users need ASPP to set up communication parameters or modem signals.

If applications do not need to set up communication parameters, for example Baud rate, Parity, etc., TCP RAW mode is a good solution to purely handle the serial data communications.

If applications need to set up communication parameters or control the modem signals, like DTR, RTS, Break, etc., application software can use Moxa's ASPP lib. to ease the programming without really understand the protocol or behavior to communicate with CN2510.

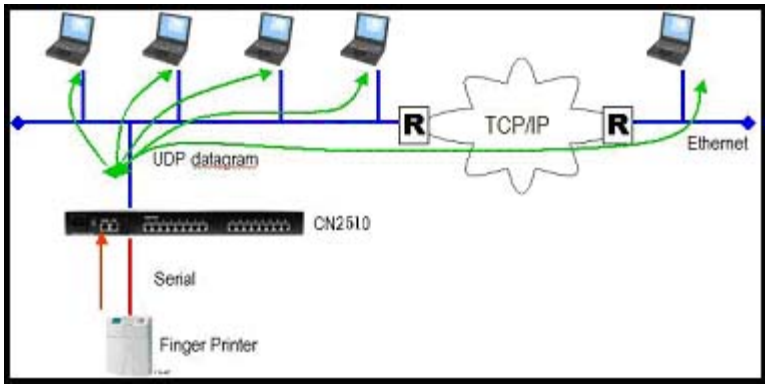


UDP Communication (RAW UDP mode)

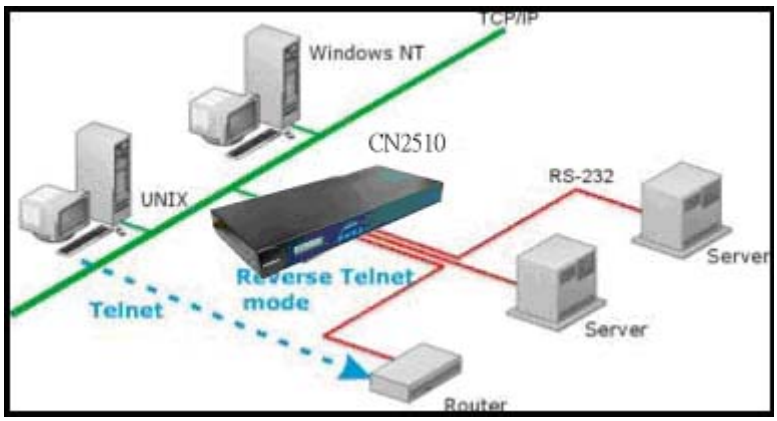
UDP is a non connection-oriented data transmission method. UDP has advantages of high speed and high data transmission efficiently, eliminating TCP's handshaking process. But it comes with the price of sacrificing data integrity. UDP doesn't have the functions of re-assembling and retransmitted packets like TCP when data is missing. When data needs to be transmitted fast to the Ethernet, and application software at the upper level can be responsible for data's correctness, the UDP is a very ideal transmission method.

In addition, UDP can also use broadcasting or multicasting technologies to handle point to multi-point transmissions. UDP is an ideal transmission way when a serial device needs to transmit data to another group of devices or PCs.

Refer to chapter 6 for detailed information and configuration instructions.



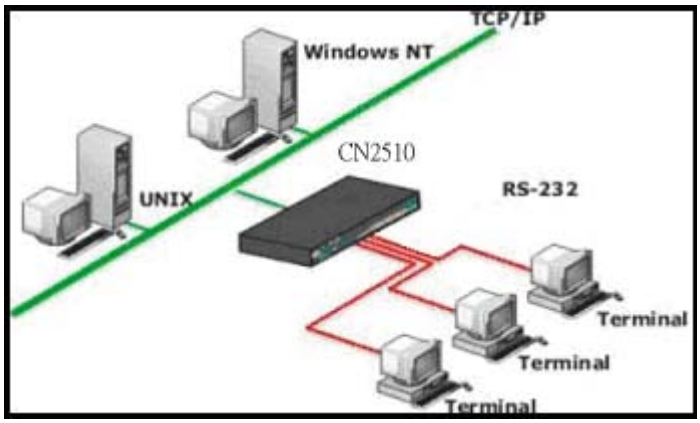
Console Management (Rtelnet mode)



Console management is commonly used upon Console/AUX or COM port of routers, switches, and UPS. Rtelnet works the same as RAW mode that they only listen to one specific TCP port after booting up, and wait for the host on the network to initiate the connection. The difference is that the RAW mode does not provide conversion function of telnet protocol. If the connected devices need to use CR/LF conversion function when controlling, then users have to choose Rtelnet mode. In addition, since CN2510's Rtelnet mode is widely used in device management in Telecommunication control rooms, therefore, managers for remote hosts can also use Local User Table or RADIUS identity verification methods.

Refer to chapter 8 for detailed information and configuration instructions.

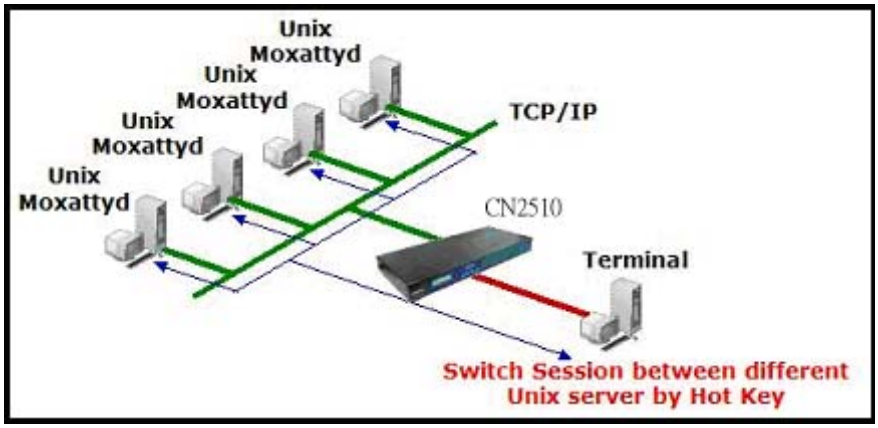
Terminal Access (ASCII, BIN mode)



CN2510 Async Server and connect terminals to Unix or Windows Servers on the network via RS-232 connectors. Many fast keys used in many terminal applications and switching session in the same terminal can be done via Terminal Access (ASCII, BIN mode).

CN2510 supports ASCII terminal and Binary terminal with up to 8 simultaneous sessions for each port. Refer to chapter 9 for detailed information and configuration instructions.

Multi-host TTY (Fix TTY mode)



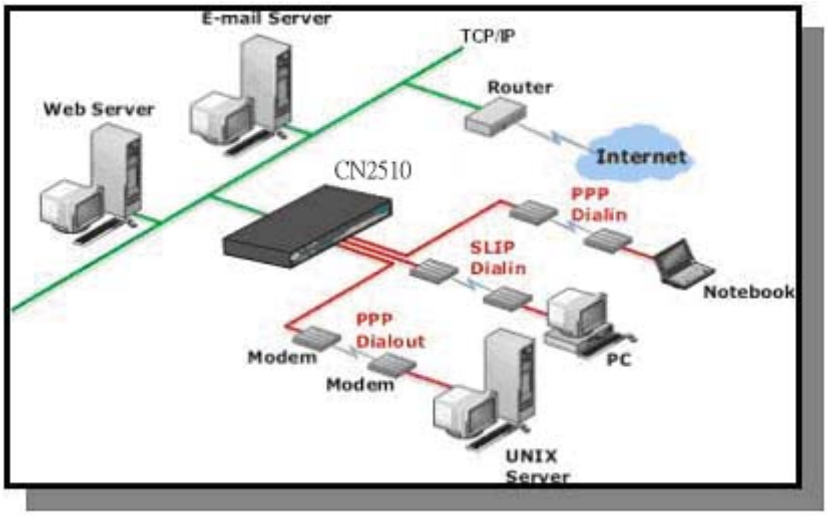
When terminals need to communicate with multiple Unix hosts on the network via several simultaneous sessions, Multi-host TTY is the ideal method for transmission.

When the communication starts, the Unix server on the network have to enable Moxattyd first to activate TTY port's mapping function. Once it's done, Moxattyd will initiate the connection with the CN2510, and the CN2510 will listen to the connection requests by various Moxattyd at different TCP ports.

Once the connection is established, the Terminal server shown at the bottom right corner can switch session by using hot keys, in order to use one terminal to control different Unix hosts.

Refer to chapter 9 for detailed information and configuration instructions.

Dial-in/out of Band Management (PPP/SLIP mode)

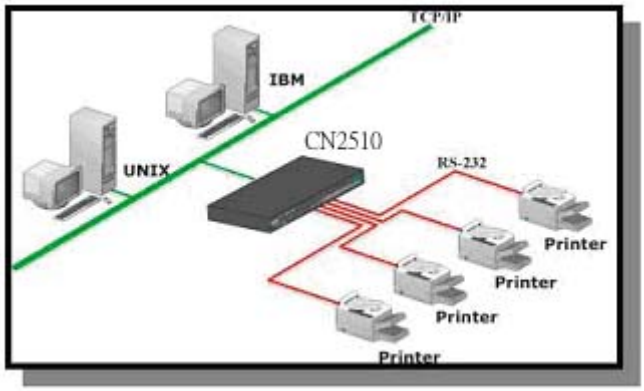


Moxa CN2510 Async Server provides dial-up/out access for both ISPs and enterprises needing remote access solutions. When a user at a remote site wishes to connect to the network where the CN2510 is located via PPP dial-up connection, CN2510 not only acts as a dial-up server, but also verifies the identity of the user via Local User Table or RADIUS, making sure that the user has legal access to this network.

CN2510 supports PPP, SLIP, and Terminal modes for dial-up/out access. No matter which operating system you are using, you can always use standard PPP dial-up procedures to establish the connection.

For those who need to use serial ports for WAN connection, CN2510 can act as an Async Router. Users can adjust different WAN connectors' routing via routing protocols (including static, RIP I, and RIP II). Refer to chapter 11 for detailed information and configuration instructions.

Network Printer (RAW/LPD mode)



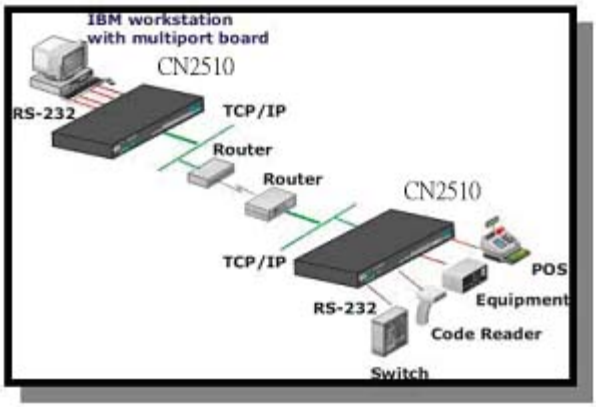
CN2510 Async Server's printing program (running under UNIX) provides an excellent solution for banking or stock exchange services with huge printing demands.

Users can use Windows or Unix host's network printer function via RAW mode. All you have to do is assign a specific IP address and a TCP port number to specify the printer's location.

In addition, when LPD protocol is needed for operating the printer, you can also connect to the printer via LPD mode.

Refer to chapter 11 for detailed information and configuration instructions.

Multiplexor Access (Term_BIN/Rtelnet mode)



Let's suppose that you have installed a multi-port serial board inside a traditional UNIX host, but wish to extend the device control range without dismantling the host. You can do this with CN2510. It provides satisfying Multiplex and De-multiplex solutions using its RTelnet and terminal modes. No need to modify any software.

In this application, CN2510 acts like a converter, successfully extend the communication distance by using CN2510 in pairs and the network, solving the problem of short communication distance of the serial connection. During the communication process, CN2510 will transmit every piece of serial data to another CN2510 at a remote site. But if you need to copy the status of control signals to the device at a remote site, this mode does not support.

Refer to chapter 12 for detailed information and configuration instructions.

4

Setting up Windows Real COM/Linux Real TTY/Unix Fixed TTY

CN2510 Async Server supports Real COM/TTY driver for Windows and Linux, allowing serial ports to be recognized as Real COM ports by the Windows operating system, or Real TTY ports by Linux environments. Through CN2510 Async Server, many applications can be enhanced to an Ethernet environment instantly without modifying the software. The original software can still be used to control COM3, COM4 and COM5. By using the Real COM driver provided by Moxa, users can control and operate these serial ports as Windows' local Real COM ports.

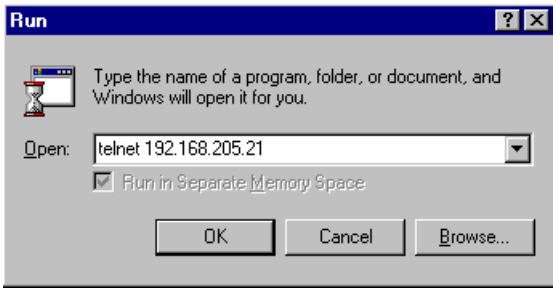
The following topics are covered in this chapter:

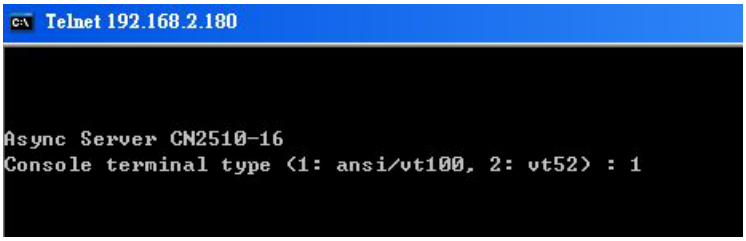
- **Configuring Port Operation Mode – Port Menu [Mode]**
  - NT Real COM Mode
- **Configuring Port Connection Setting – Port Menu [Line]**
- **Setting up Hosts**
  - Setting up Windows XP/2003 Hosts
  - Setting up Windows 2000 Hosts/Compiling Real TTY
  - Setting up Windows 95/98/ME/NT

Configuring Port Operation Mode – Port Menu [Mode]

Open Port Menu→Mode to install NT Real COM mode.

1. To enter CN2510 **MAIN MENU**, use either Telnet from a network terminal, or connect directly to CN2510 Async Server with a console terminal. Select **ansi/vt100**, and then press **Enter**. Refer to chapter 2 for more details about how to enter **MAIN MENU**.

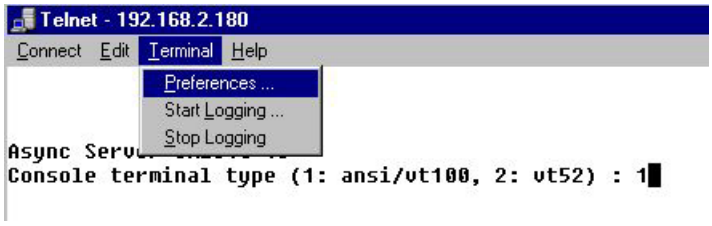


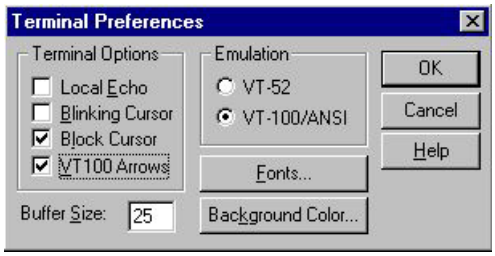


2. The table below is the **MAIN MENU** of CN2510 Async Server. Before you begin, familiarize yourself with the cursor movement functions before starting the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

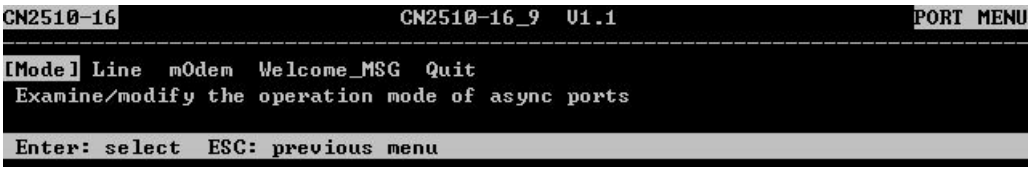
If you have problems using the arrow keys to move the cursor in Windows 9x or NT environment, click on the **Terminal** menu, choose **Preferences**, and then select **VT100 Arrows** in the **Terminal Preferences** window. Click on **OK** to go back to the **MAIN MENU**, and then it can work properly now.



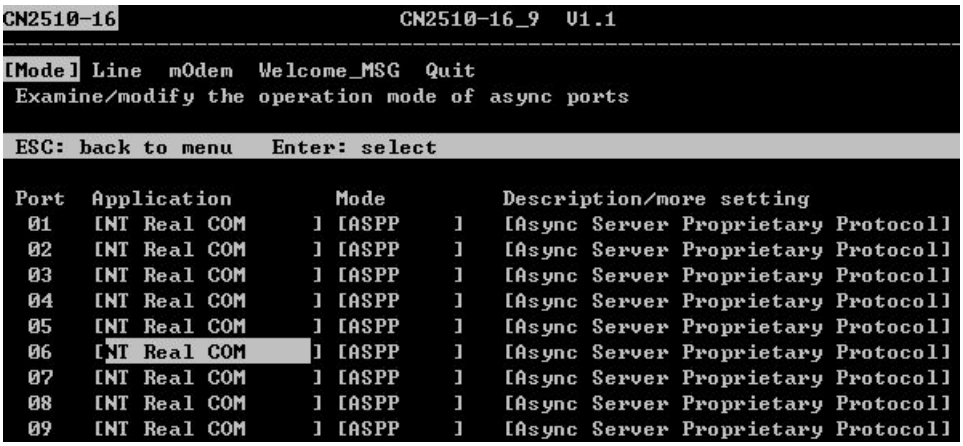


3. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

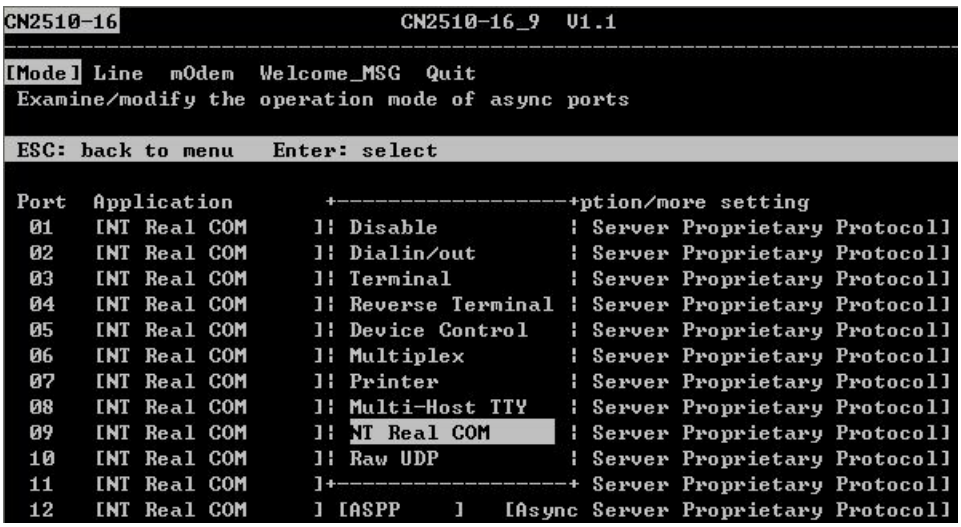
4. In **PORT MENU**, select **Mode**, and then press **Enter**.



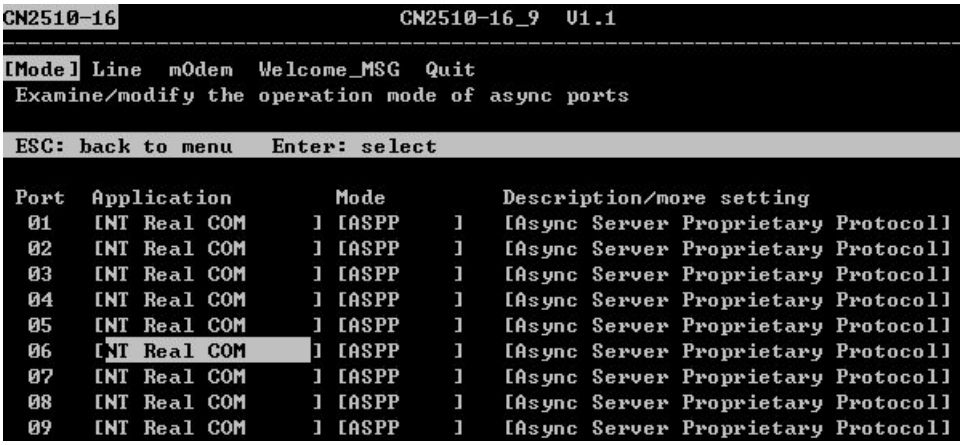
5. In **Mode**, use the arrow keys to move the cursor to the application corresponding to serial ports. Here we use Port 6 as an example.



6. Press **Enter** to open the application window. Use **Up/Down** Arrow keys to select **NT Real COM mode**. Press **Enter** to confirm.

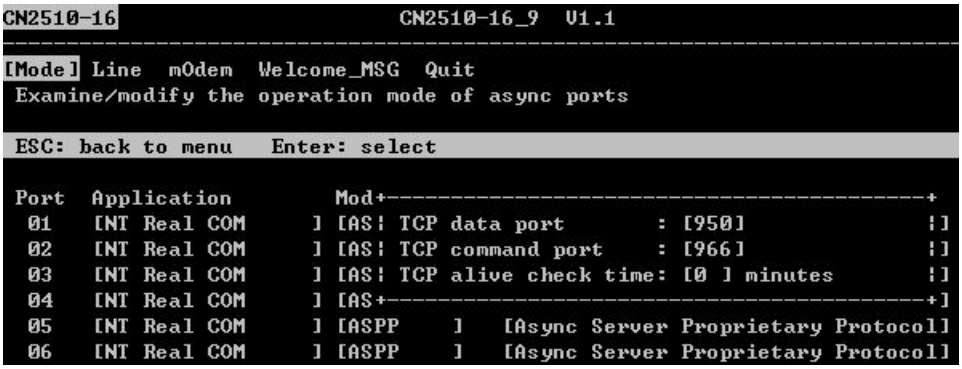


7. Repeat Step 6 to configure port settings. For example, you can follow the steps described below to configure Port 1 to Port 8 for **NT Real COM mode** application.



NT Real COM Mode

1. Move the cursor to **Description/more setting**, press **Enter**, and a message window will open next.



Setting	Value	Notes	Necessity
TCP data port	950-965	The host will use this Port value to determine to send the data to which device. For example, 950 is the first serial device. 951 is the second serial device.	Yes
TCP command port	966-981	The host will use this Port value to determine to send the command to which device. For example, 966 is the first serial device. 967 is the second serial device.	Yes
TCP alive check time	0-99 minute	This is the time period for checking whether TCP connection is alive or not. If receiving no response, CN2510 will re-configure the port and shut off the initial connection.	Optional

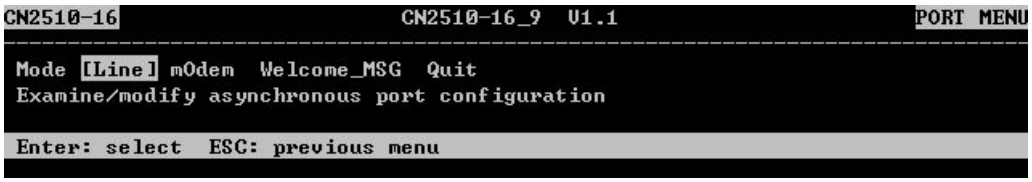
2. Repeat the step above to configure all **NT Real COM** ports.

3. Pres **ESC** to return to the **Port Menu**.

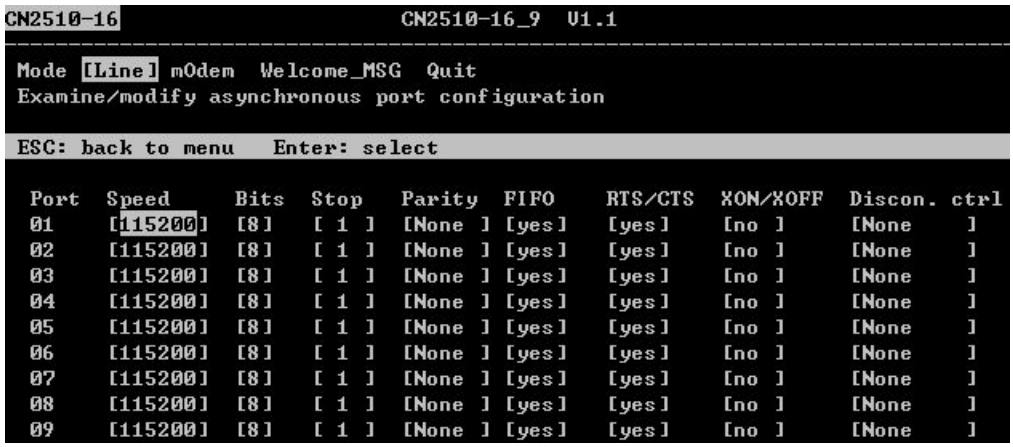
Configuring Port Connection Setting – Port Menu [Line]

1. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

2. In **PORT MENU**, select **Mode**, and then press **Enter**.



3. Select the ports and configure the settings.



Setting	Value	Notes
Speed	50 bps to 230.4 Kbps	Baud rate
Bits	5/6/7/8	Data bits
Stop	1/2	Stop bits
Parity	None, Even, Odd, Mark, Space	Parity Check
FIFO	Yes/No	FIFO setting
RTS/CTS	Yes/No	Hardware Flow Control
XON/XOFF	Yes/No	Software Flow Control
Discon. ctrl	None/DSR off/DCD off	Disconnection condition when DSR or DCD signal is off

4. Repeat the step above to configure all functions.
5. Press **ESC** to return the **Port Menu**.

Setting up Hosts

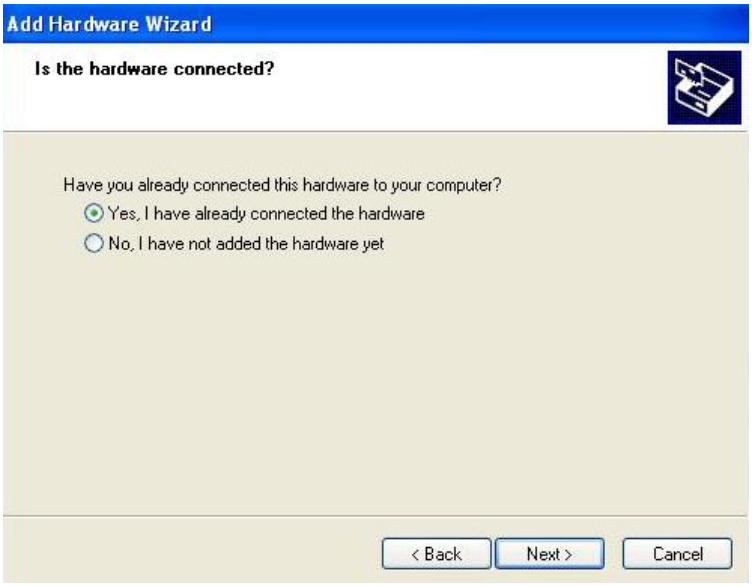
Setting up Windows XP/2003 Hosts

After using CN2510 Console Utility to set up a Windows XP/2003 host, you'll need to install port driver on every Windows XP/2003 host needing access to CN2510 ports. Here we use Windows XP as an example for illustrating installation. Windows 2003 installation is the same as Windows XP. Refer to the following instruction.

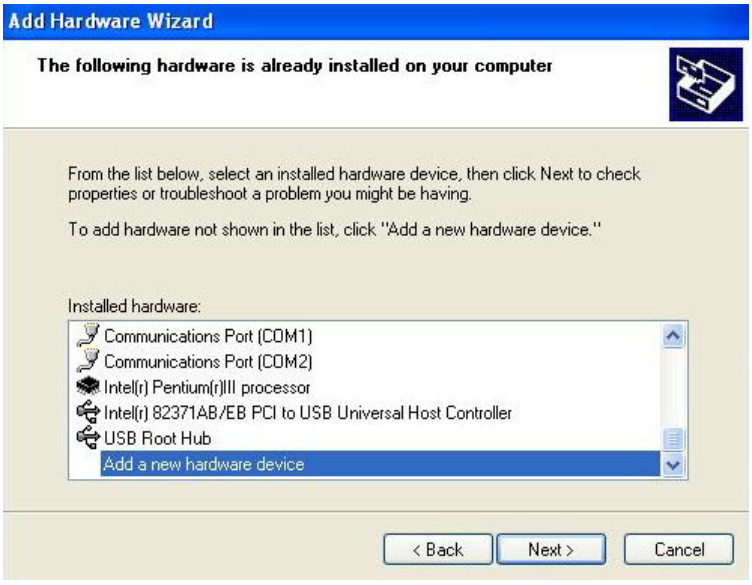
Installing a Server

1. Unzip Windows XP/2003 driver file located in CN2510 CD ROM to your hard disk.
2. Click on **Control Panel**-->**Add Hardware**. The **Add Hardware Wizard** will start. Click on **Next** to continue.

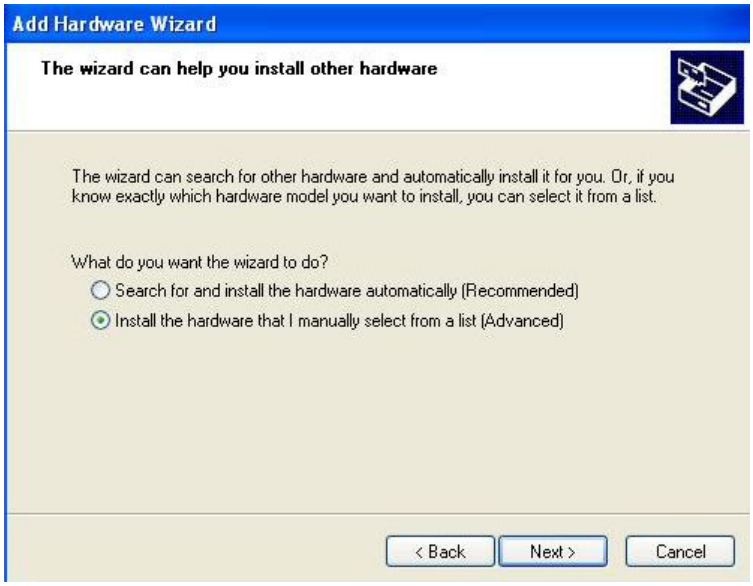
3. The next window to open will ask you if the hardware is connected. Select **Yes, I have already connected the hardware**, and click on **Next** to continue.



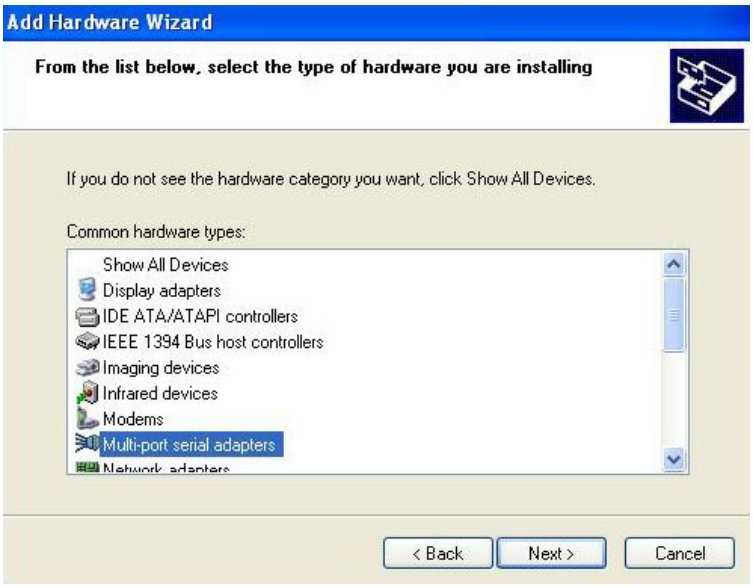
4. Select **Add a new hardware device** in the next window that opens. And then click on **Next** to continue.



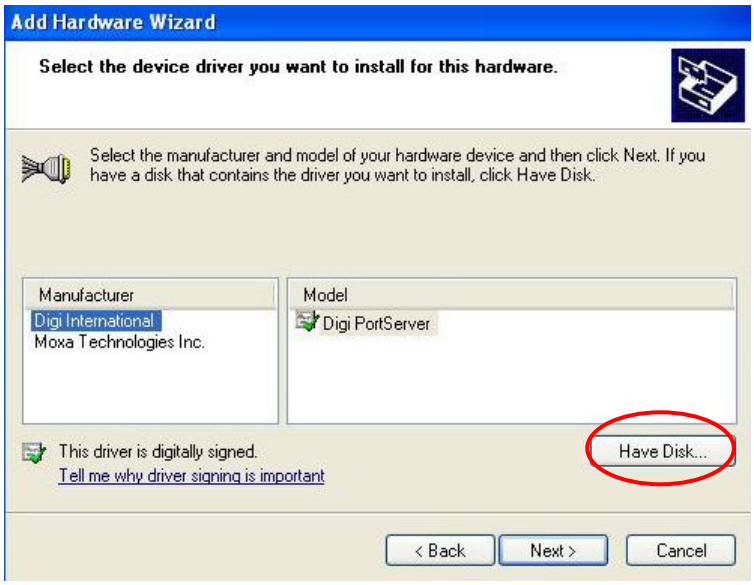
5. In the window that opens next, select **Install the hardware that I manually select from a list (Advanced)** to install the hardware. And then click on **Next** to continue.

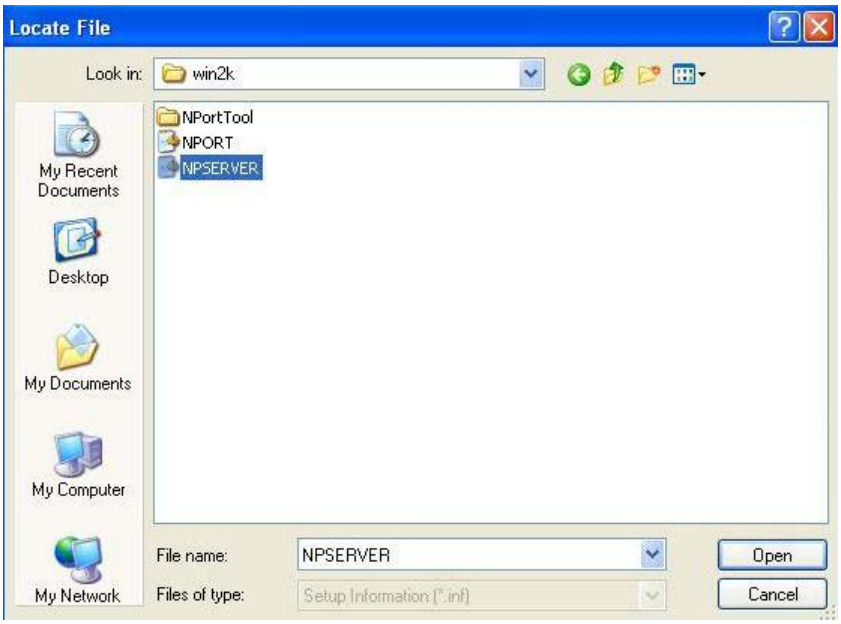


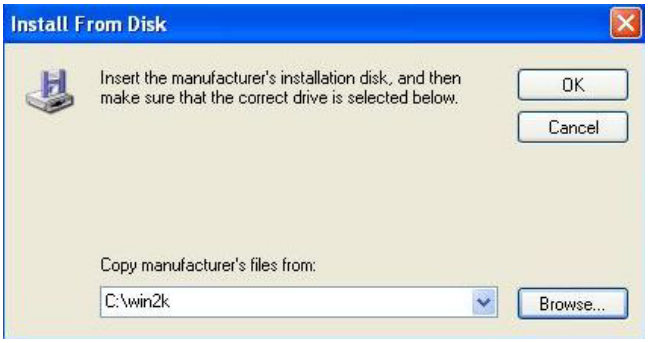
6. The window that opens next will ask you select the type of hardware you are installing. Select **Multi-port serial adapters**, and click on **Next** to continue.



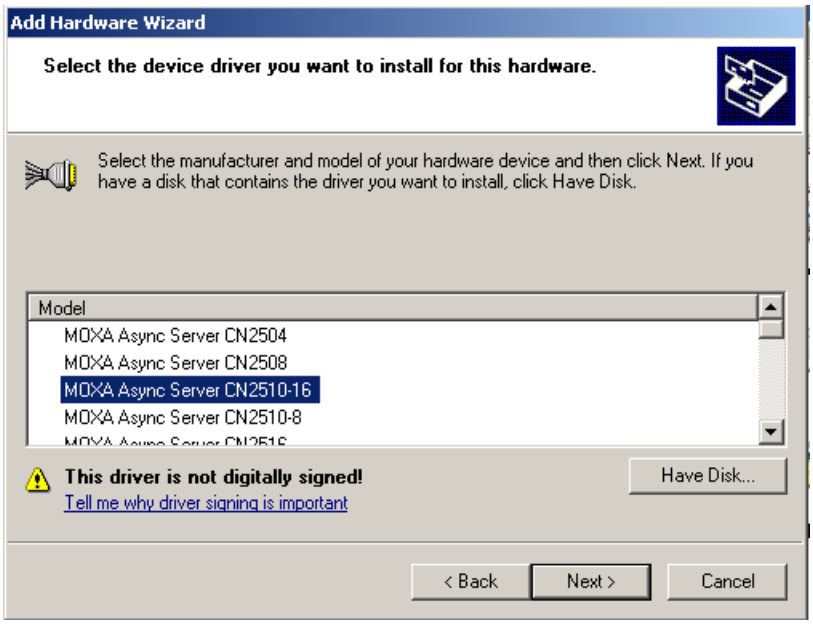
7. The window that opens next will ask you to select the device driver you want to intall for this hardware. Select **Have Disk** to install from a disk, select the driver file **NPSERVER.INF**, and locate the driver file.



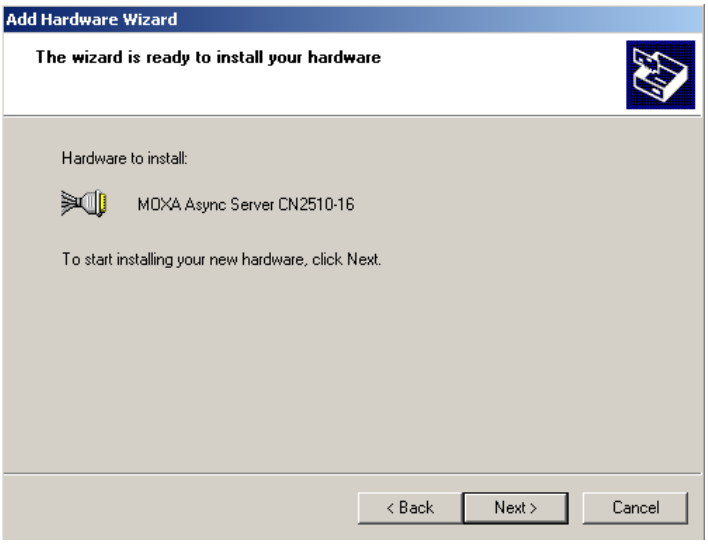




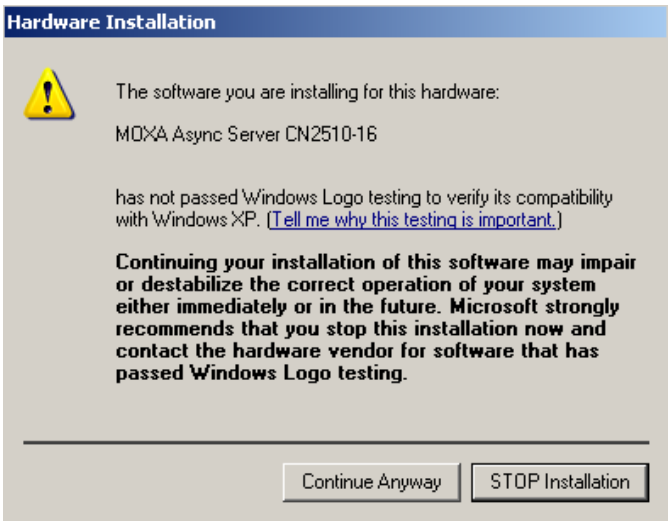
8. In the next window to open, select your CN2510 model, and click on Next to continue.

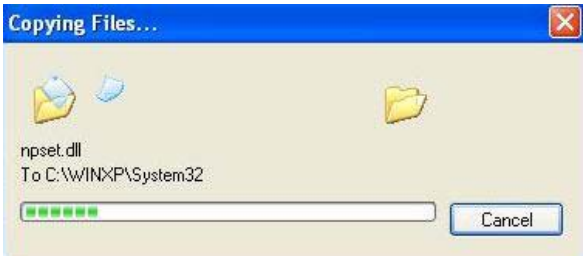


9. The Wizard will start installing the Server driver, and automatically search for CN2510 products over the network.

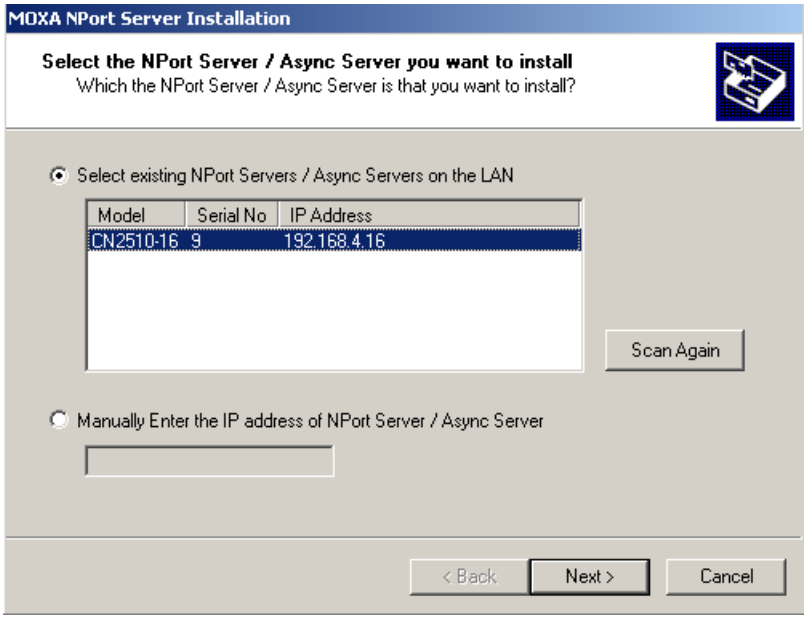


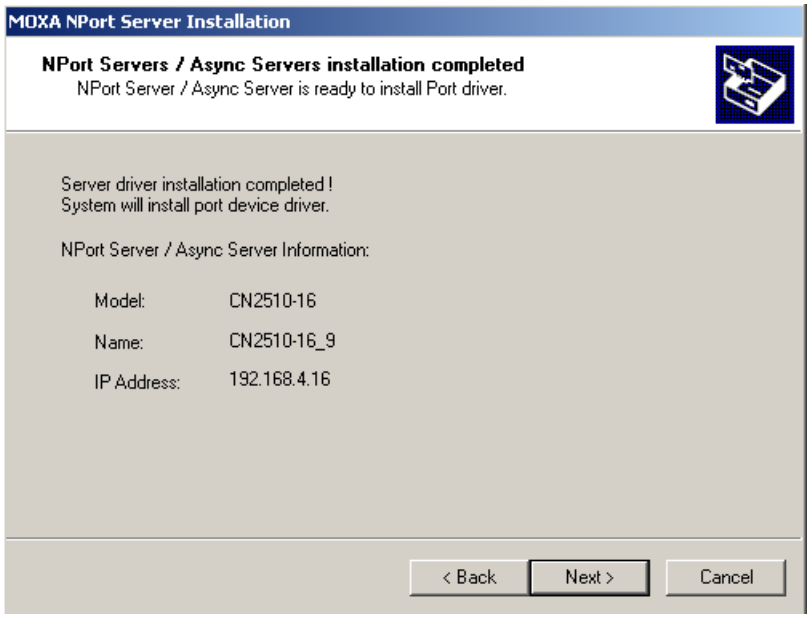
10. Although the next window to open states that software hasn't passed Windows Logo testing, you can rest assured that this driver has already been tested and been shown that it can support this Windows OS. Click on **Continue Anyway** to proceed. Then it will show the following window.

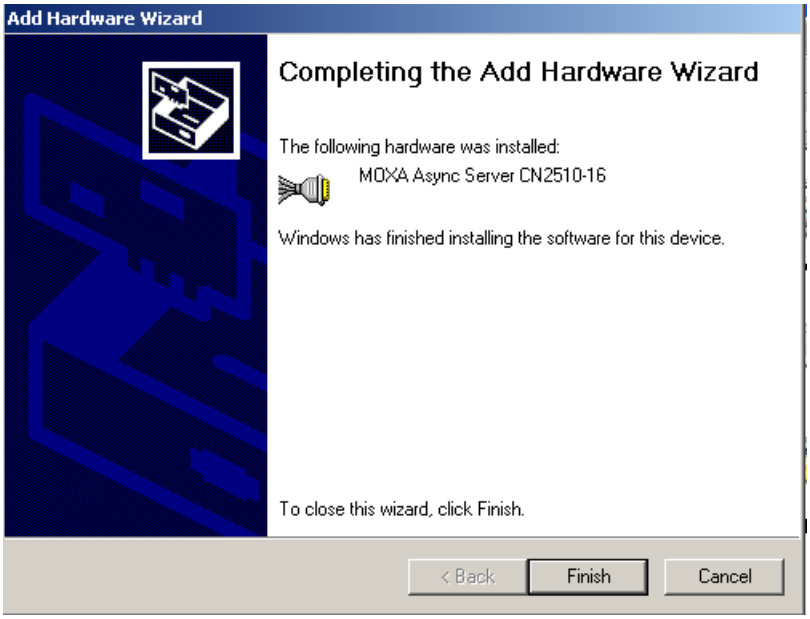




11. You can either select the CN2510 that has been located, or select **Manually Enter the IP address of NPort Server / Async Server** to search for CN2510. Click on **Next** to finish installing CN2510.



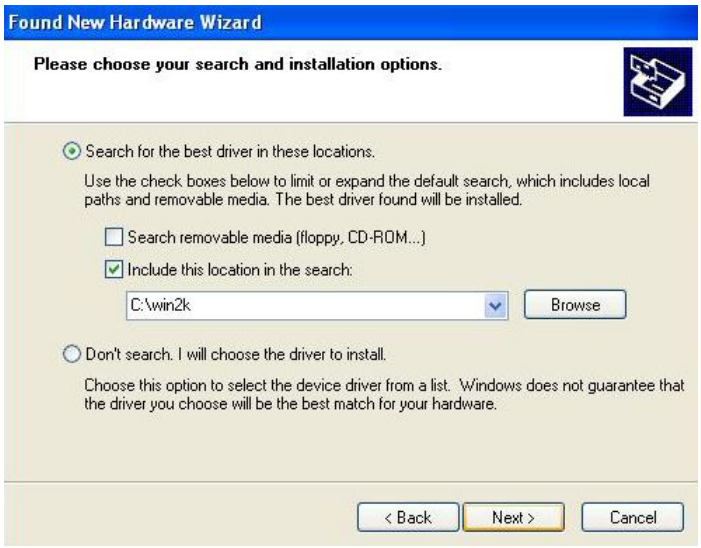




Installing Ports

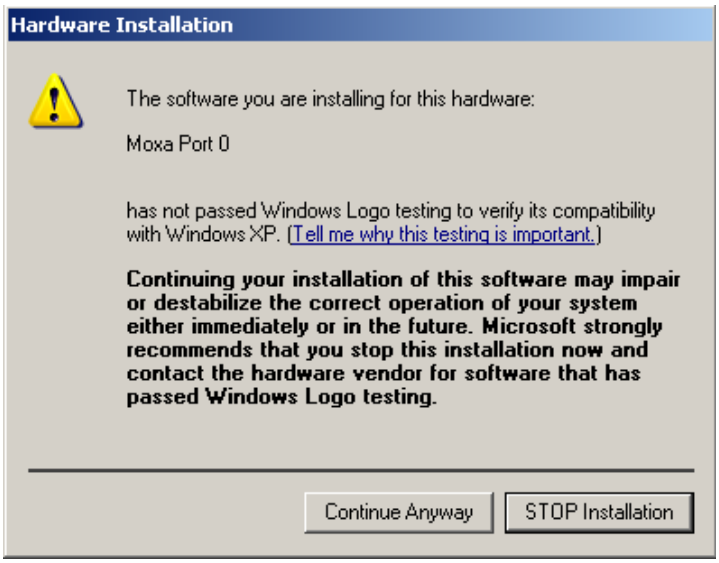
1. After CN2510 server installation is finished, Windows will automatically pop out another window stating that a new hardware is found. Select **Install from a list or specific location (Advanced)**, and click on **Next** to continue.

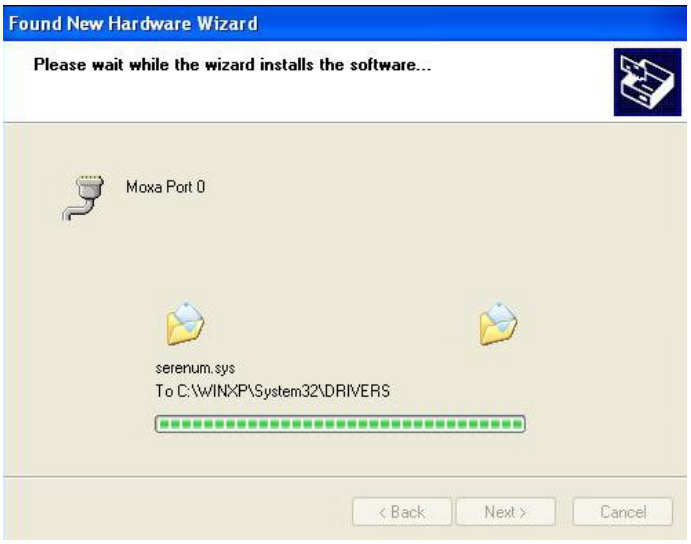
2. The window that opens next will ask you to choose your search and installation options. Select **Include this location in the search**, and click on Next to continue.



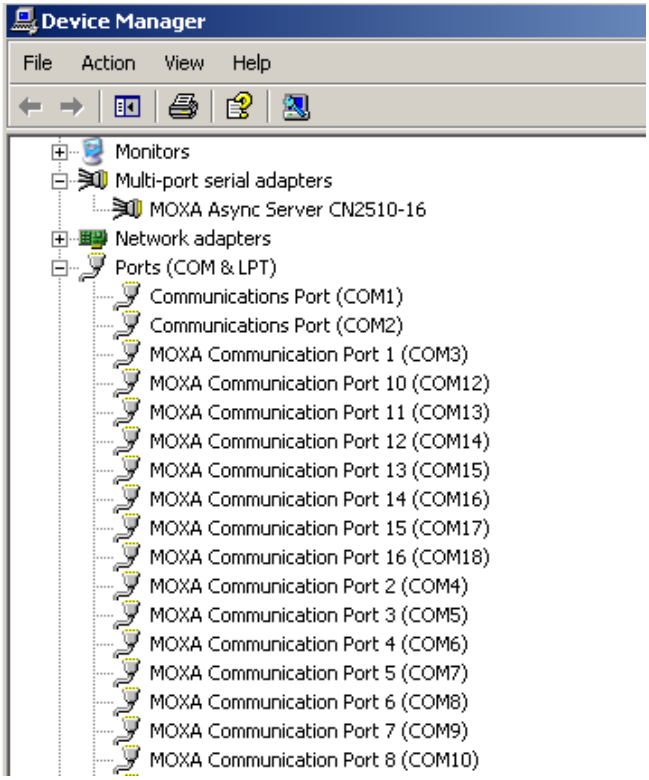
3. The system will install all necessary files automatically.

4. Although the next window to open states that software hasn't passed Windows Logo testing, you can rest assured that this driver has already been tested and been shown that it can support this Windows OS. Click on **Continue Anyway** to proceed. Then it will show the following window.





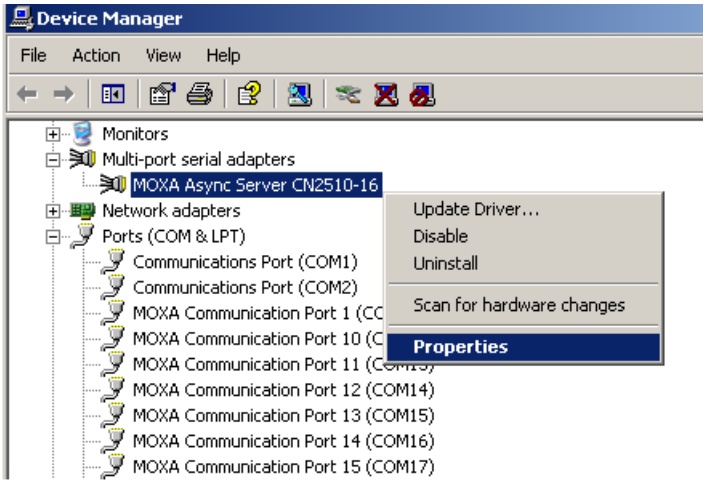
5. Moxa Port 0 installation is finished. The step 1 to step 4 will be repeated for several times, depending on how many serial ports on your CN2510 product. After the installation is complete, you can find the COM ports in **Device Manager**.

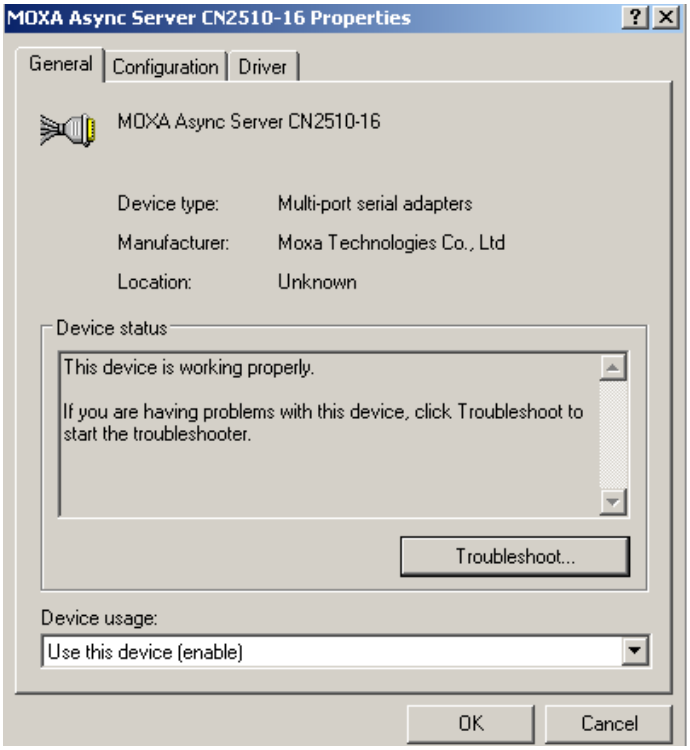


Configuring CN2510 in a Windows XP/2003 Environment

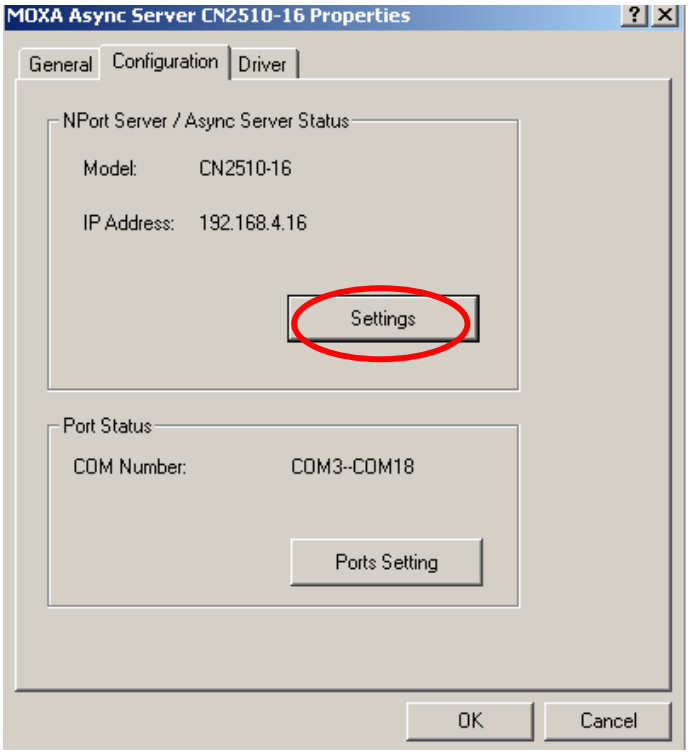
As soon as CN2510 driver is installed, the driver will guide you through CN2510's configuration. Or you can configure CN2510 later after the driver is installed. Here we will introduce Real COM Mapping configuration.

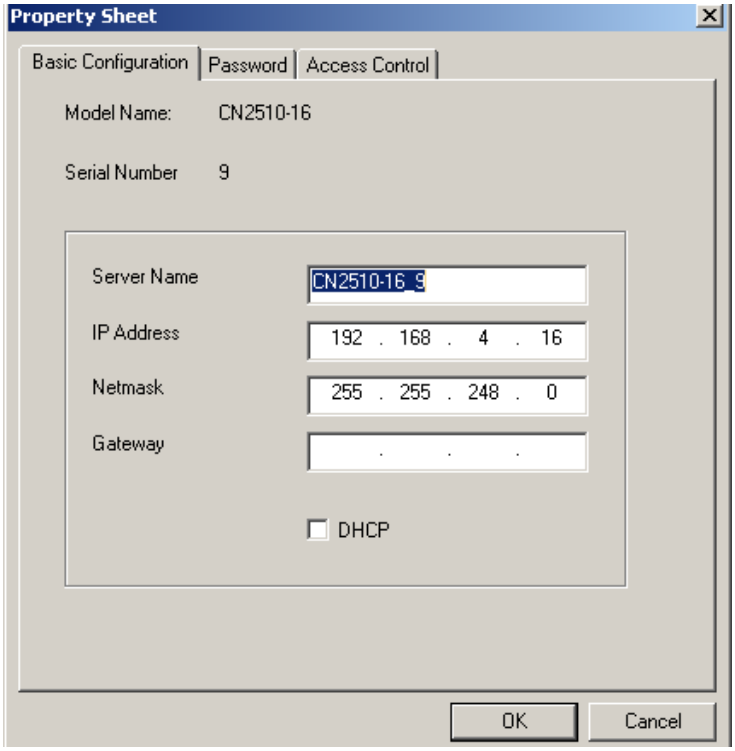
1. Click on **Device Manager-->Multiport serial adapters**. All of the installed CN2510s will be displayed. Select the CN2510 you wish to configure. Right click and select **Properties**.

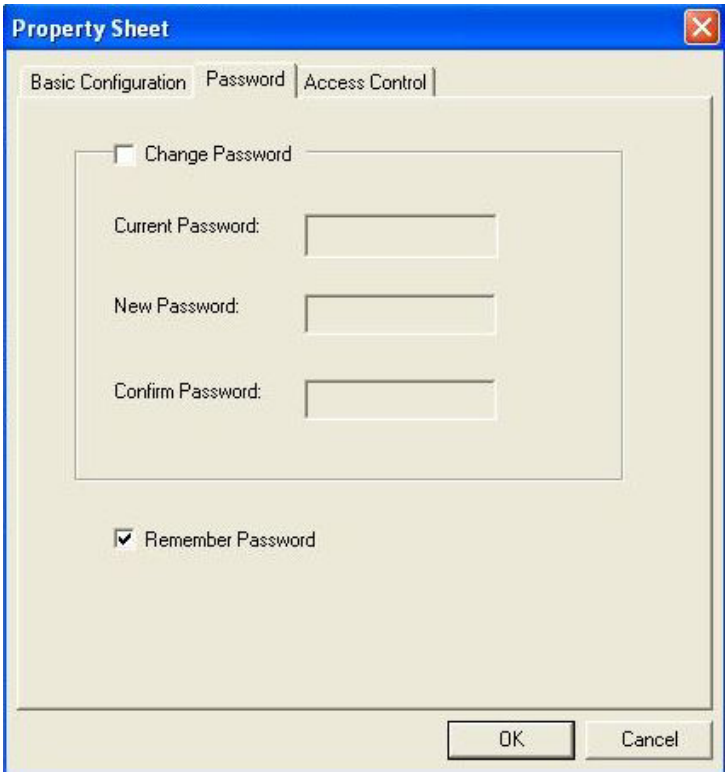


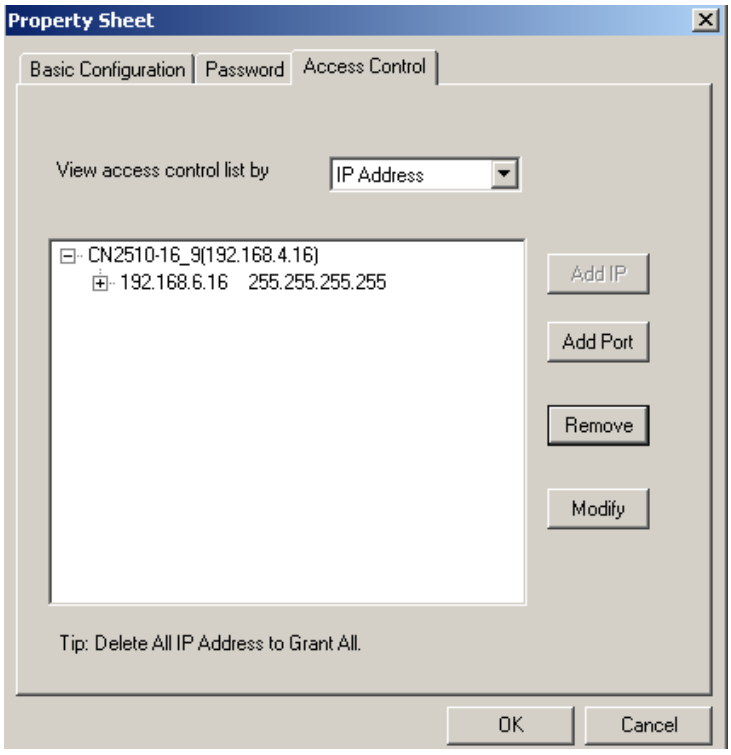


2. Click on NPort Server/Async Server Status's **Settings** to configure CN2510's Basic Configuration, Password, and Access Control.

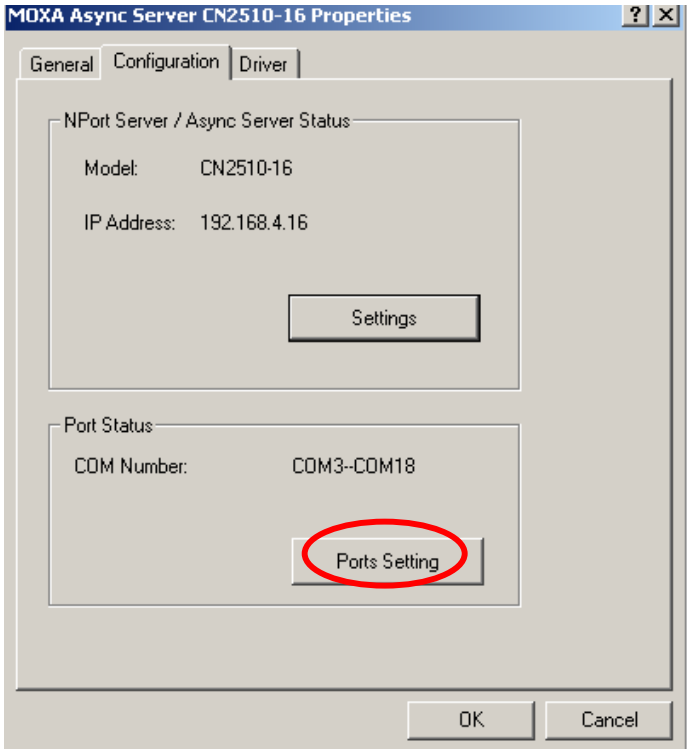

MOXA Async Server CN2510-16 Properties
General
Configuration
Driver
NPort Server / Async Server Status
Model:
CN2510-16
IP Address:
192.168.4.16
Settings
Port Status
COM Number:
COM3--COM18
Ports Setting
OK
Cancel

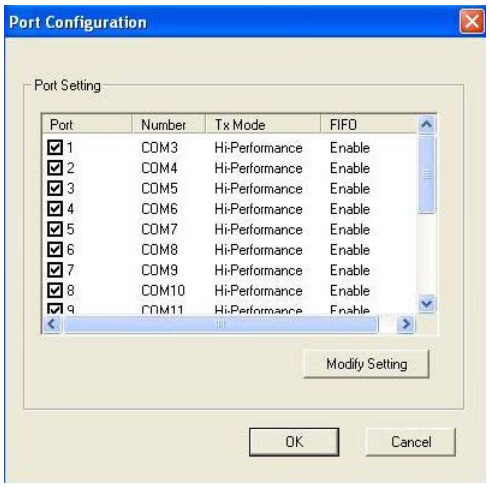

Property Sheet
Basic Configuration
Password
Access Control
Model Name:
CN2510-16
Serial Number
9
Server Name
CN2510-16_9
IP Address
192 . 168 . 4 . 16
Netmask
255 . 255 . 248 . 0
Gateway
DHCP
OK
Cancel

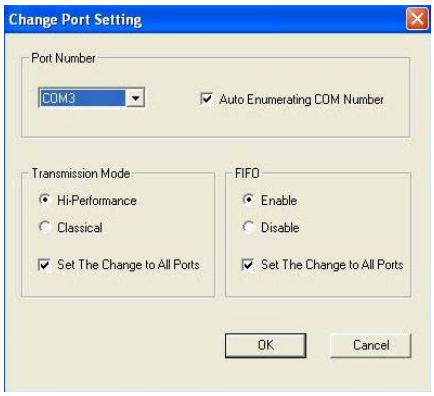

Property Sheet
Basic Configuration
Password
Access Control
Change Password
Current Password:
New Password:
Confirm Password:
Remember Password
OK
Cancel


Property Sheet
Basic Configuration
Password
Access Control
View access control list by
IP Address
CN2510-16_9(192.168.4.16)
192.168.6.16 255.255.255.255
Add IP
Add Port
Remove
Modify
Tip: Delete All IP Address to Grant All.
OK
Cancel

3. Click on **Port Setting** to configure COM port's data transmission mode and FIFO.







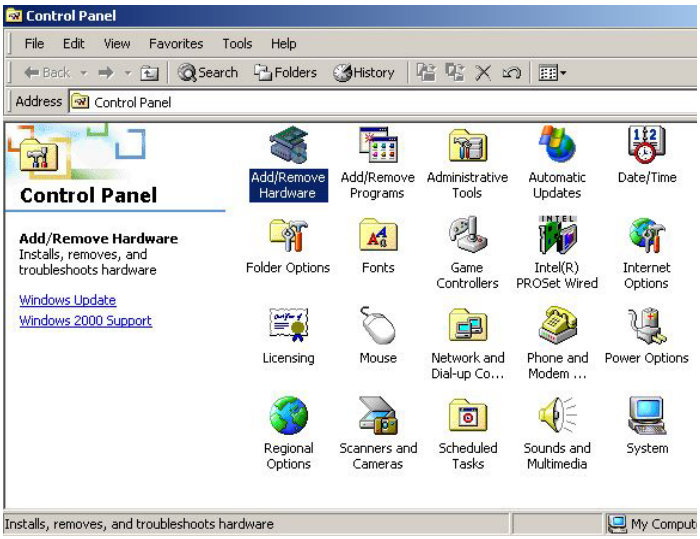
Setting up Windows 2000 Hosts

After setting up a CN2510 Async Server via Control Panel in a Windows 2000 environment, you'll need to install port driver on every Windows 2000 host needing access to CN2510 ports.

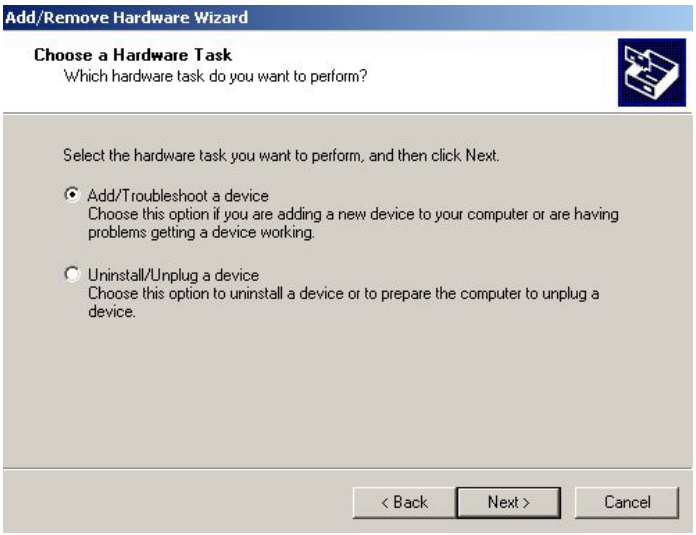
Installing a Server

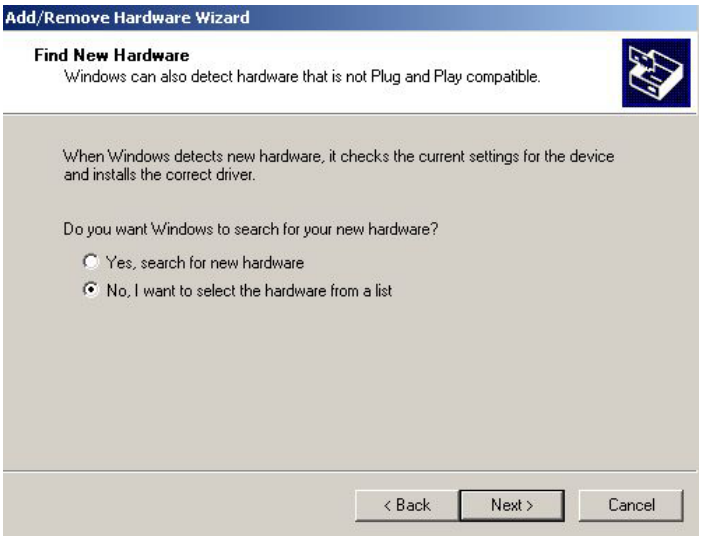
1. Unzip Windows 2000 driver file located in CN2510 CD ROM to your hard disk.

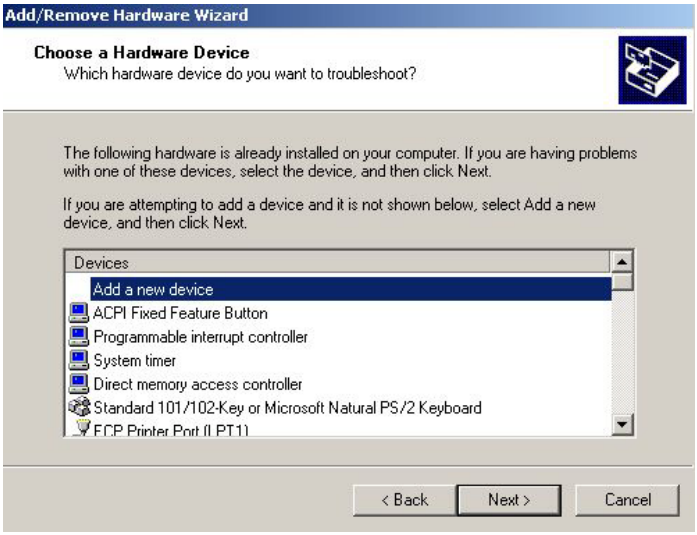
2. Click on **Control Panel-->Add/Remove Hardware**. The **Add/Remove Hardware Wizard** will start. Click on **Next** to continue.



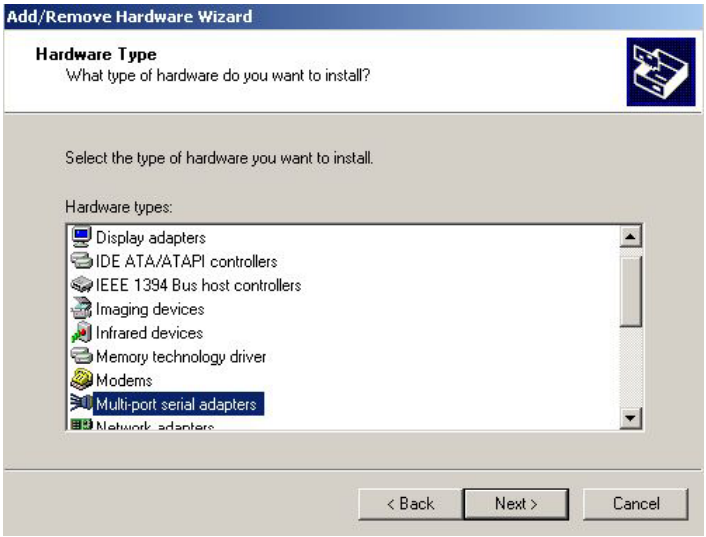
3. In the next window to open, select **Add/Troubleshoot a device**, and click on **Next** to continue. In the next window to open, select **No, I want to select the hardware from a list**.



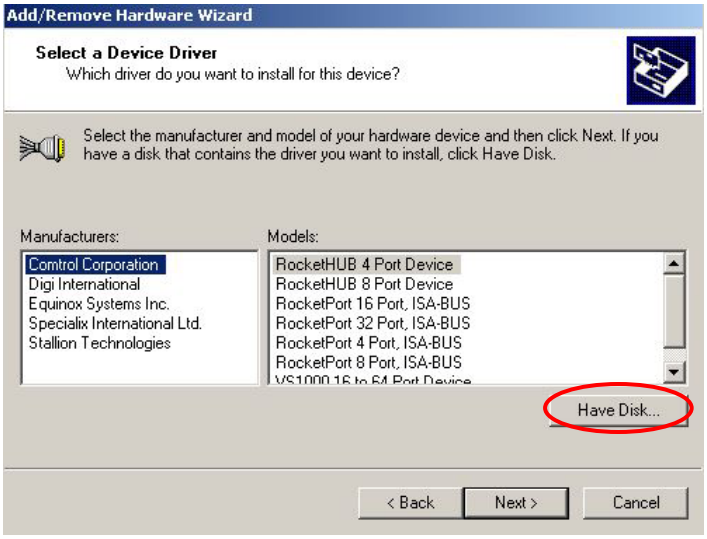


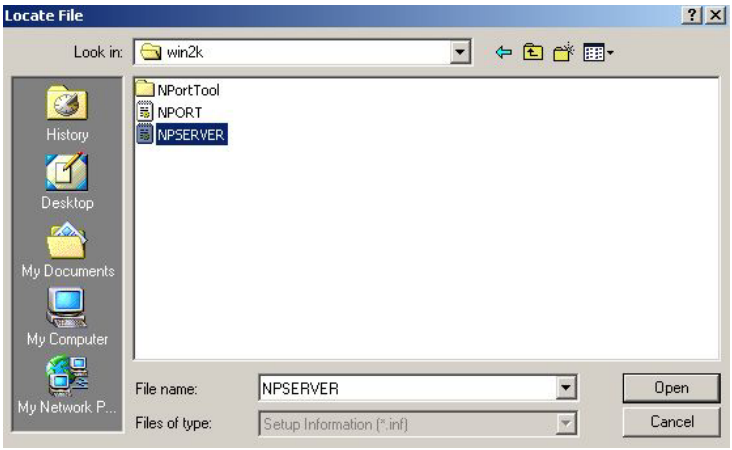


4. In the window that opens next, select **Multi-port serial adapters** from the **Hardware Type** list.

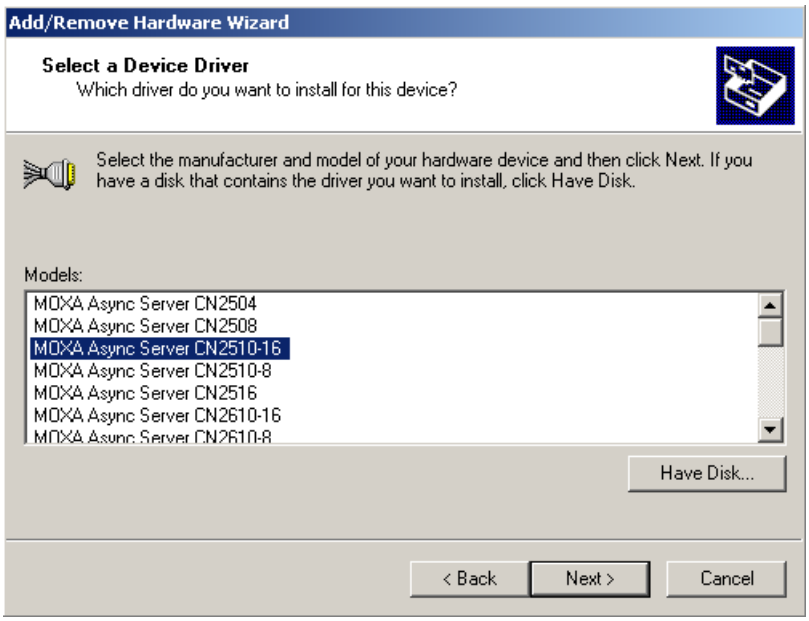


5. Select **Have Disk** to install from a disk, select the driver file **NPSERVER.INF**, and locate the driver file.

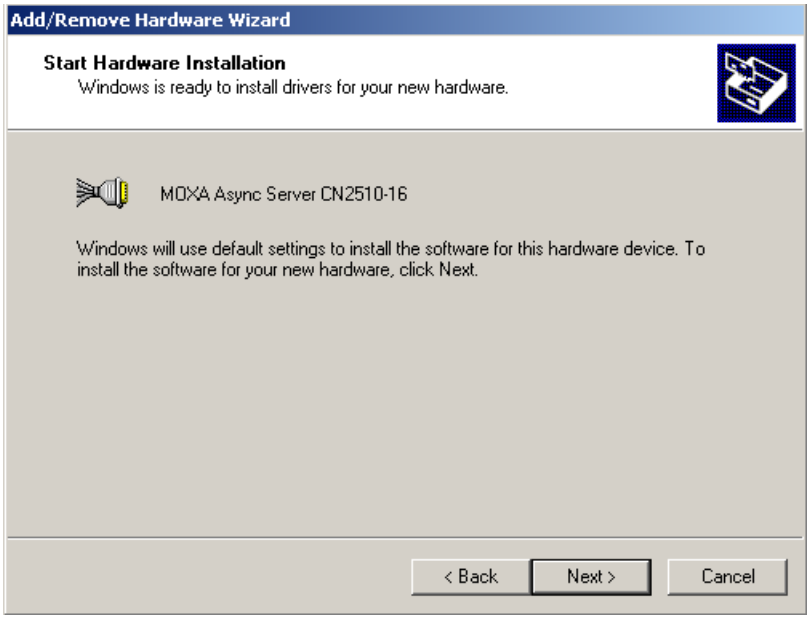




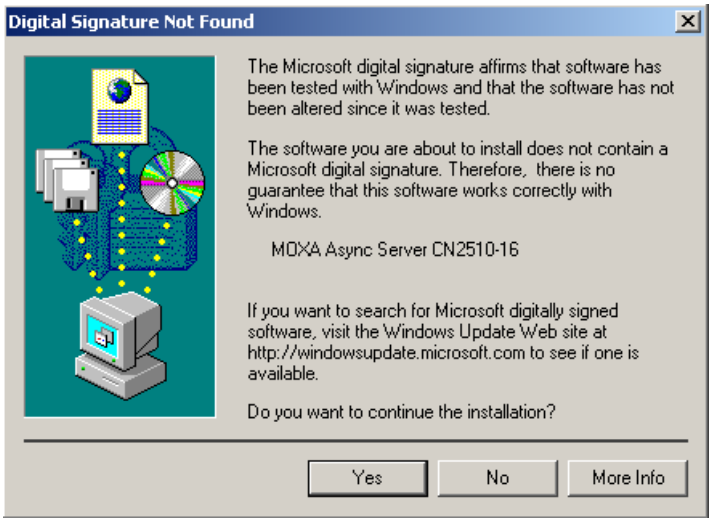
6. In the next window to open, select your CN2510 model, and click on Next to continue.



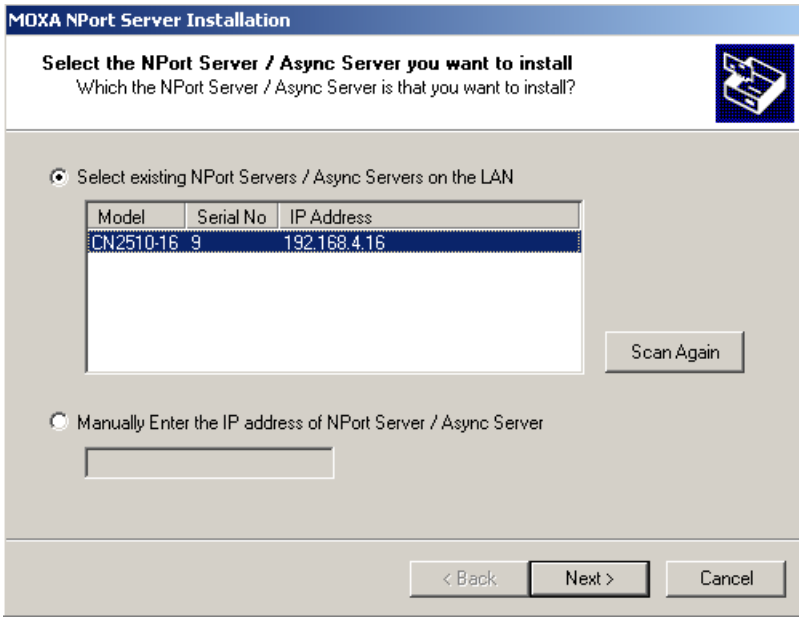
7. The Wizard will start installing the Server driver, and automatically search for CN2510 products over the network.

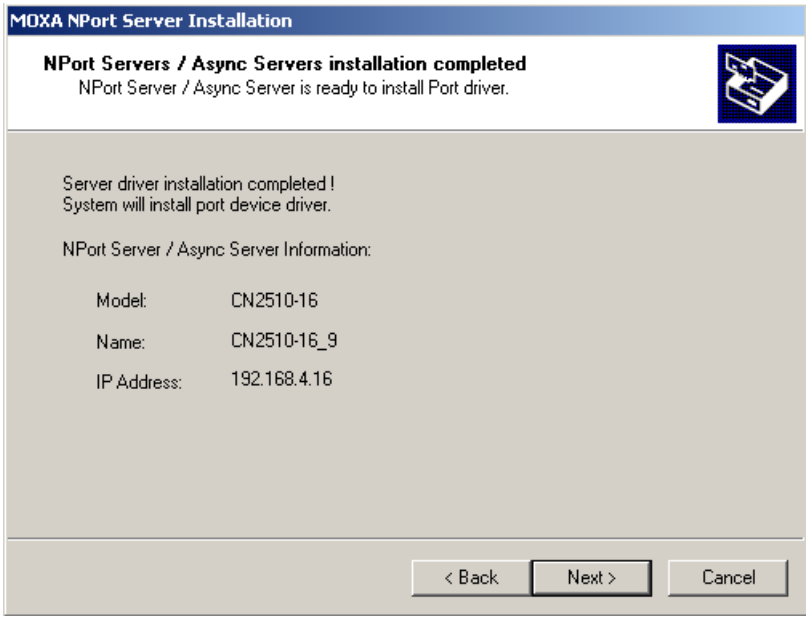


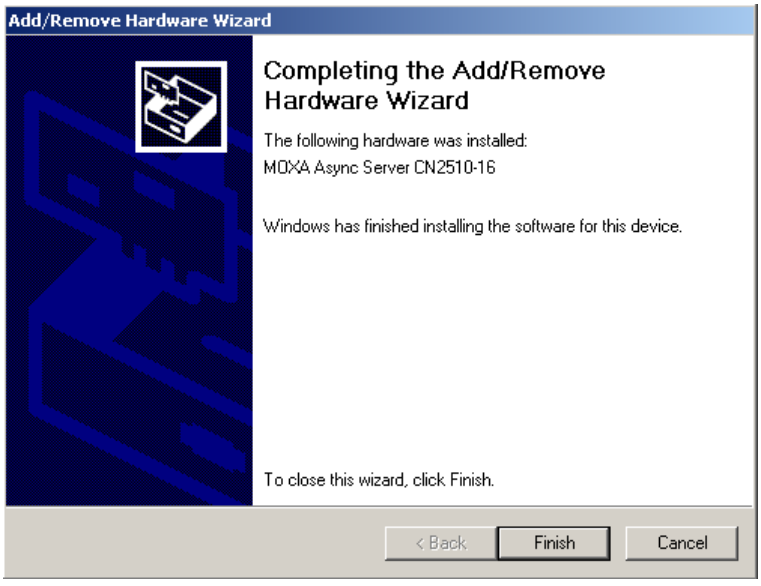
8. Although the next window to open states that software hasn't passed Windows Logo testing, you can rest assured that this driver has already been tested and been shown that it can support this Windows OS. Click on **Continue Anyway** to proceed. Then it will show the following window.



9. You can either select the CN2510 that has been located, or select **Manually Enter the IP address of NPort Server / Async Server** to search for CN2510. Click on **Next** to finish installing CN2510.


MOXA NPort Server Installation
Select the NPort Server / Async Server you want to install
Which the NPort Server / Async Server is that you want to install?
Select existing NPort Servers / Async Servers on the LAN
Model
Serial No
IP Address
CN2510-16
9
192.168.4.16
Scan Again
Manually Enter the IP address of NPort Server / Async Server
< Back
Next >
Cancel


MOXA NPort Server Installation
NPort Servers / Async Servers installation completed
NPort Server / Async Server is ready to install Port driver.
Server driver installation completed !
System will install port device driver.
NPort Server / Async Server Information:
Model:
CN2510-16
Name:
CN2510-16_9
IP Address:
192.168.4.16
< Back
Next >
Cancel

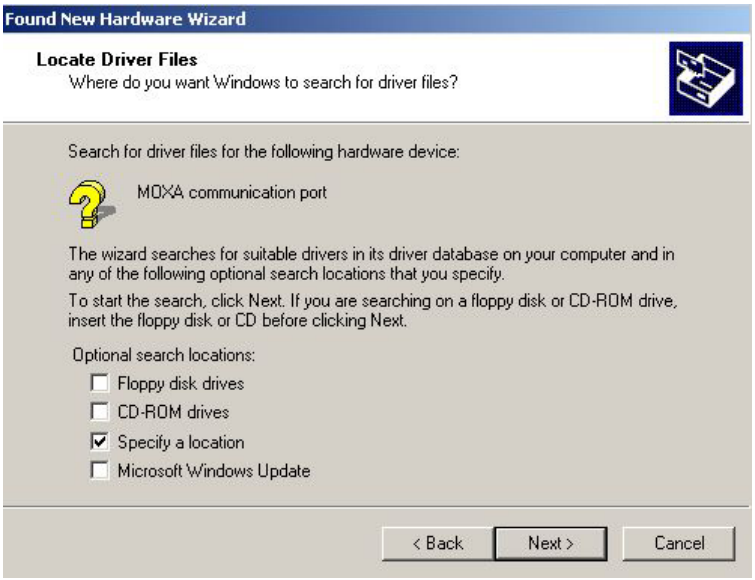

Add/Remove Hardware Wizard
Completing the Add/Remove Hardware Wizard
The following hardware was installed:
MOXA Async Server CN2510-16
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

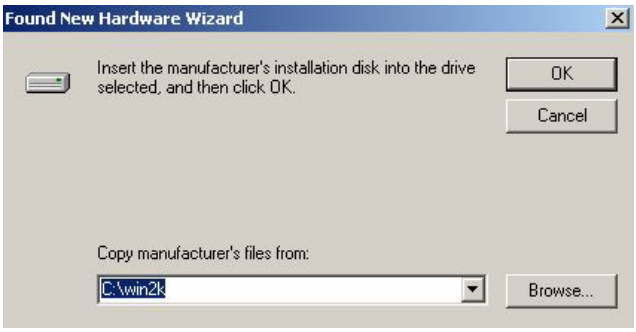
Installing Ports

1. After CN2510 server installation is finished, Windows will automatically pop out another window stating that a new hardware is found. Click on **Next** to continue.

2. The window that opens next, select **Search for a suitable driver for my device (recommended)**.

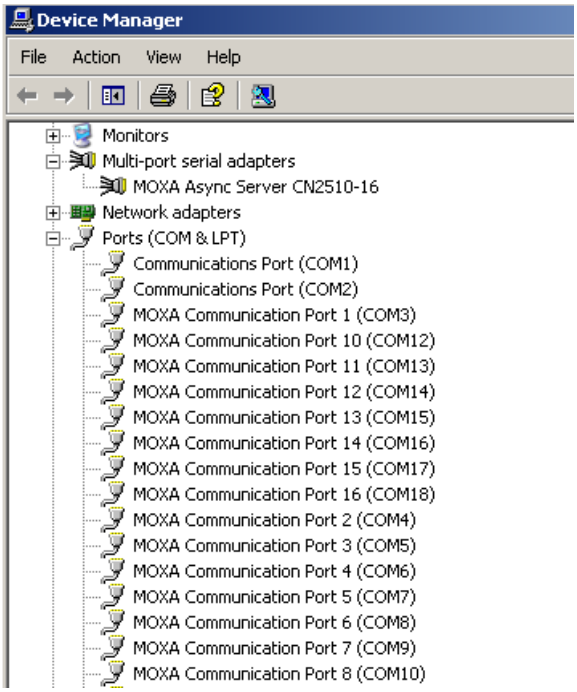
3. In the next window to open, select **Specify a location**, and click **Next** to continue. Locate the file and click on **OK**.





4. Click on **Next** to continue.

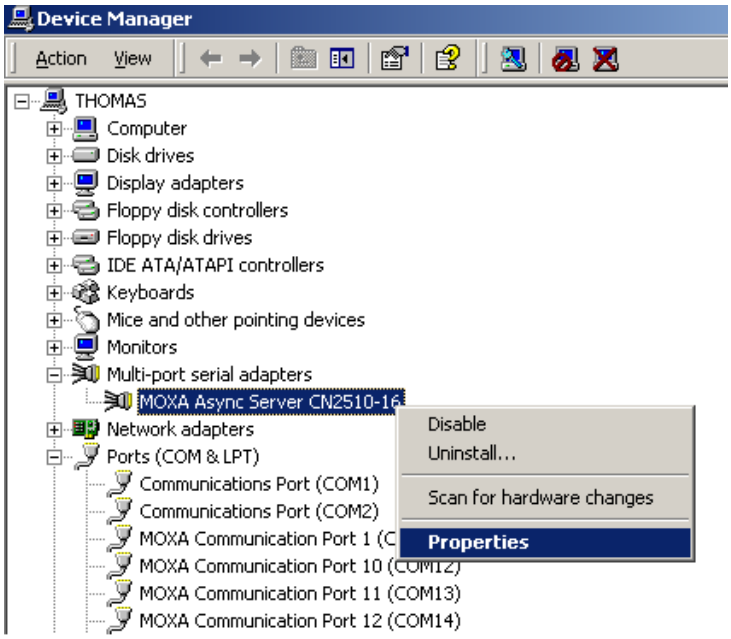
5. Moxa Port 0 installation is finished. The step 1 to step 4 will be repeated for several times, depending on how many serial ports on your CN2510 product. After the installation is complete, you can find the COM ports in **Device Manager**.

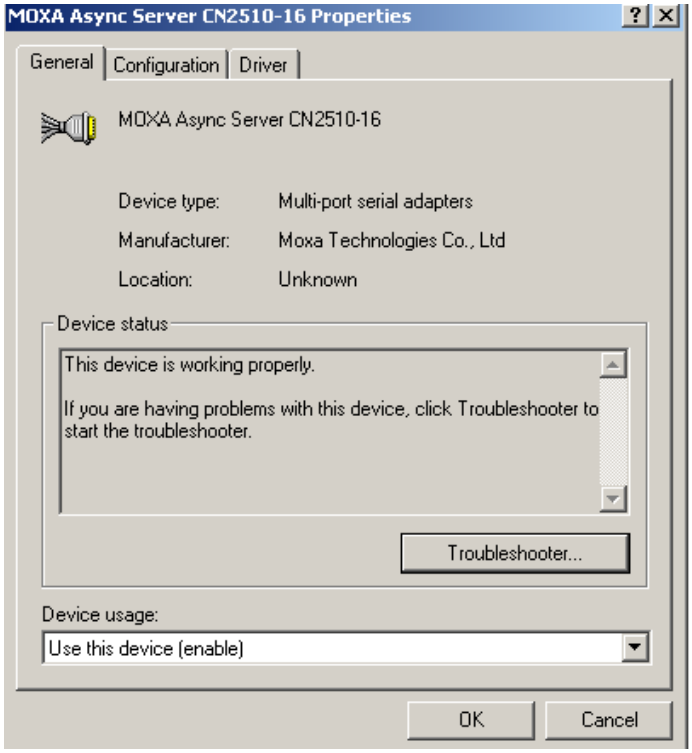


Configuring CN2510 in a Windows 2000 Environment

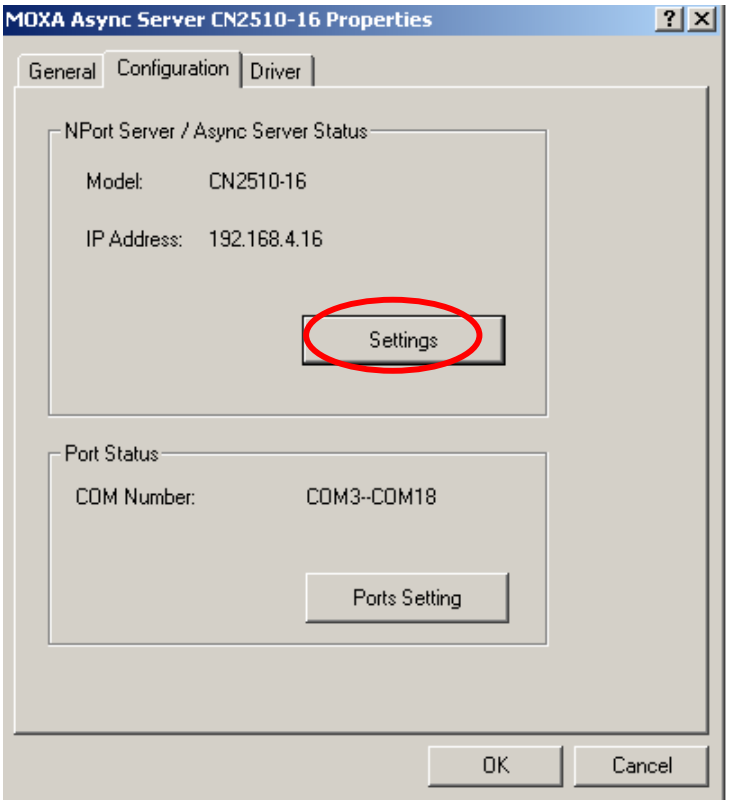
As soon as CN2510 driver is installed, the driver will guide you through CN2510's configuration. Or you can configure CN2510 later after the driver is installed. Here we will introduce Real COM Mapping configuration.

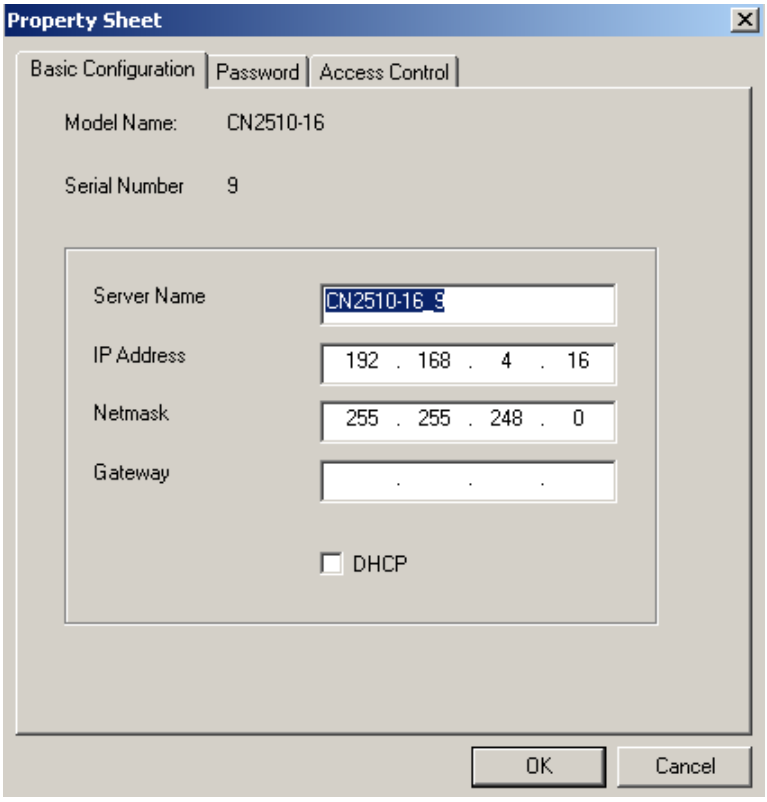
1. Click on **Device Manager-->Multiport serial adapters**. All of the installed CN2510s will be displayed. Select the CN2510 you wish to configure. Right click and select **Properties**.

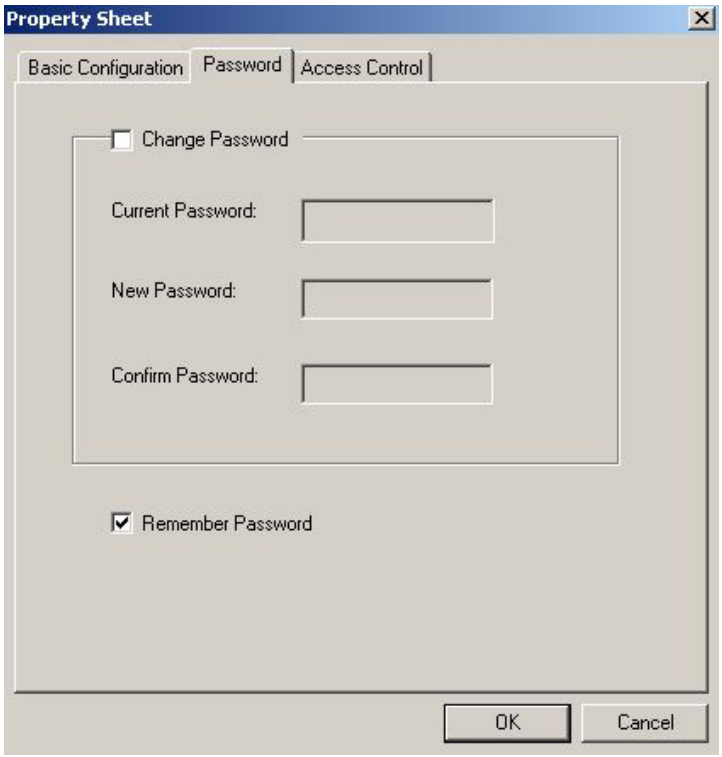


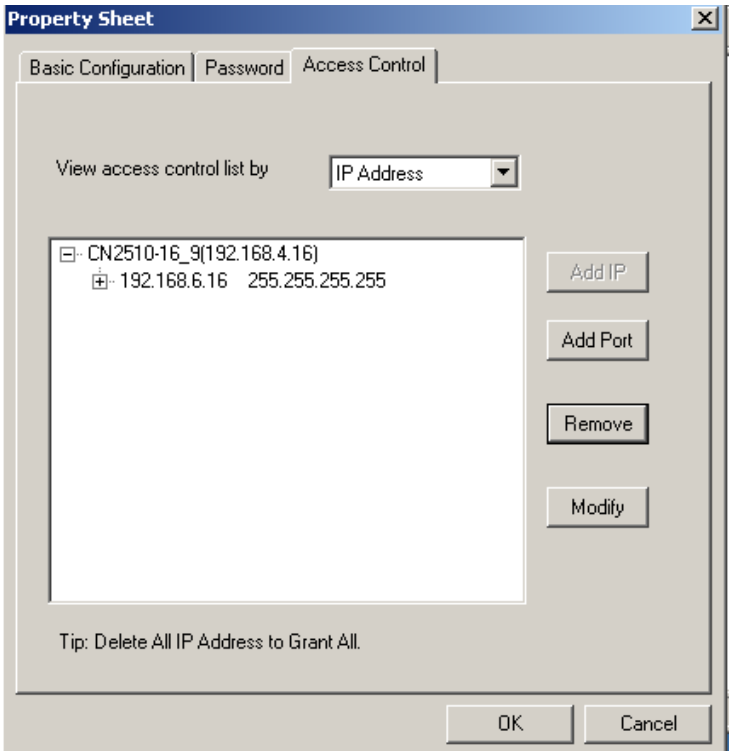


2. Click on NPort Server/Async Server Status's **Settings** to configure CN2510's Basic Configuration, Password, and Access Control.

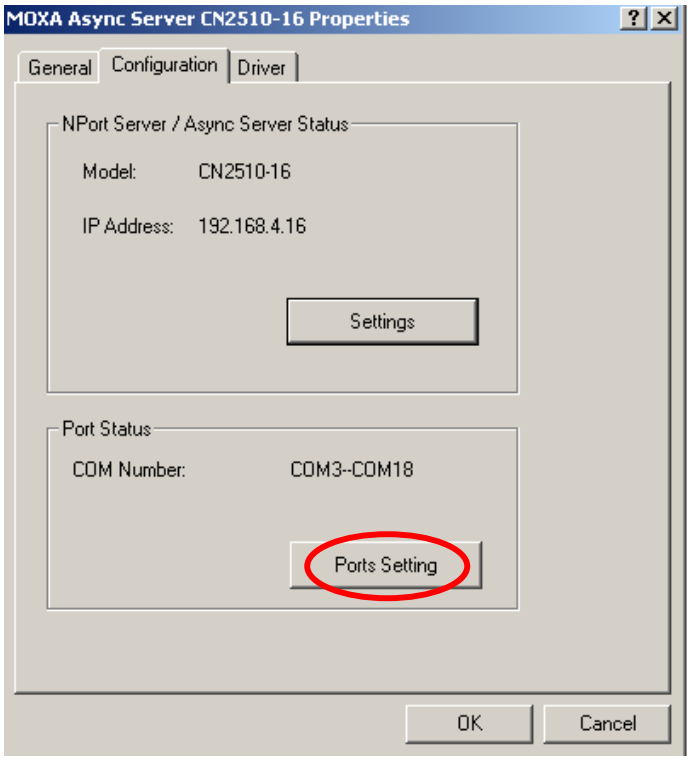

MOXA Async Server CN2510-16 Properties
General
Configuration
Driver
NPort Server / Async Server Status
Model: CN2510-16
IP Address: 192.168.4.16
Settings
Port Status
COM Number: COM3--COM18
Ports Setting
OK
Cancel

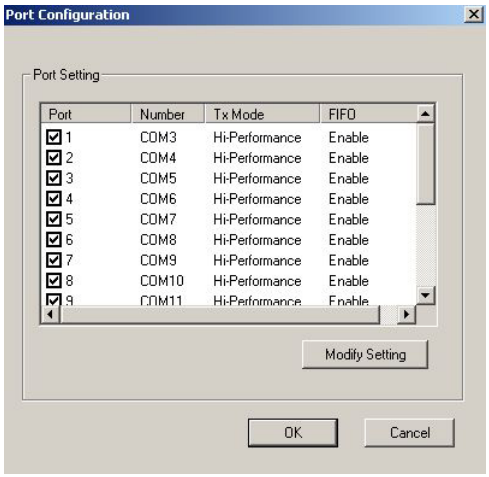

Property Sheet
Basic Configuration
Password
Access Control
Model Name: CN2510-16
Serial Number 9
Server Name
CN2510-16_9
IP Address
192 . 168 . 4 . 16
Netmask
255 . 255 . 248 . 0
Gateway
DHCP
OK
Cancel

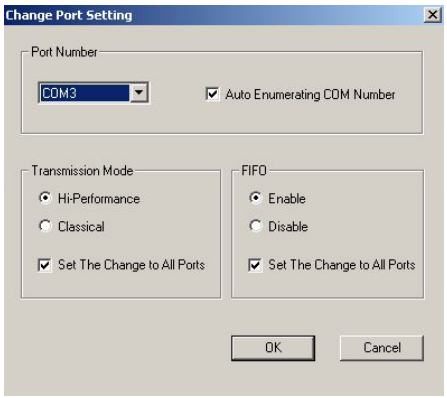




3. Click on **Port Setting** to configure COM port's data transmission mode and FIFO.





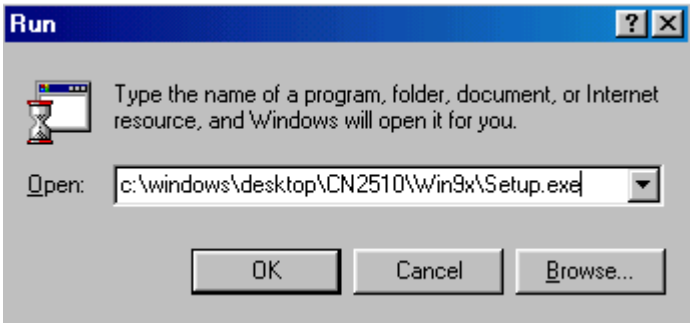


Setting up Windows 95/98/ME/NT Hosts

CN2510 Async Server uses the same driver in Windows 95/98/ME environment, and another driver in Windows NT environment. The procedures for installation are the same. For this reason, you have to make sure you are installing the correct driver. Here we use Windows NT as an example to illustrate the installation.

Installing a Server

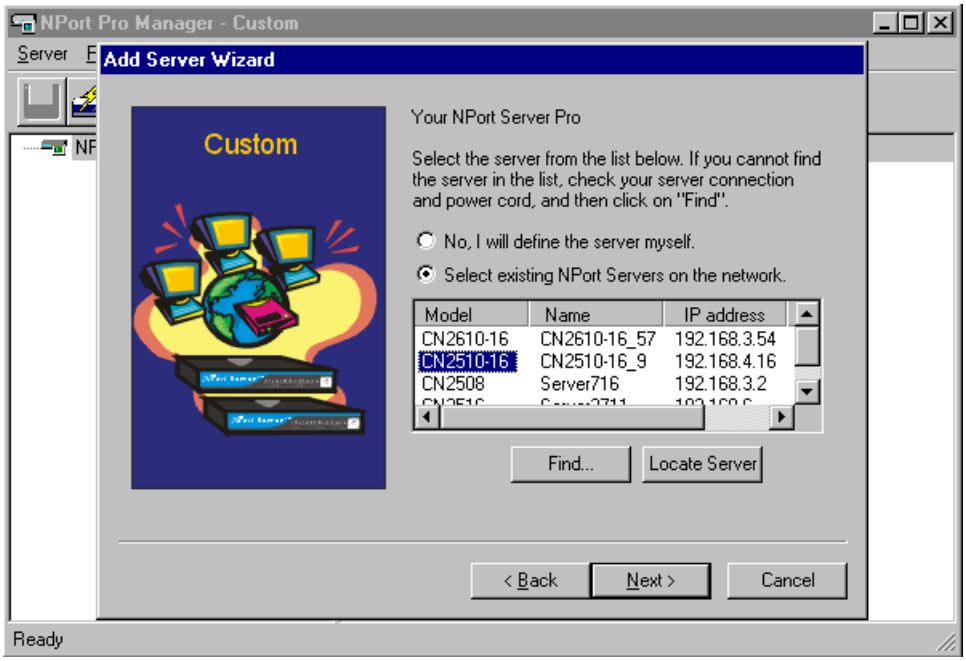
1. Unzip the driver file located in CN2510 CD ROM to your hard disk. Locate a **Setup.exe** file and run it. And click on Next to continue.



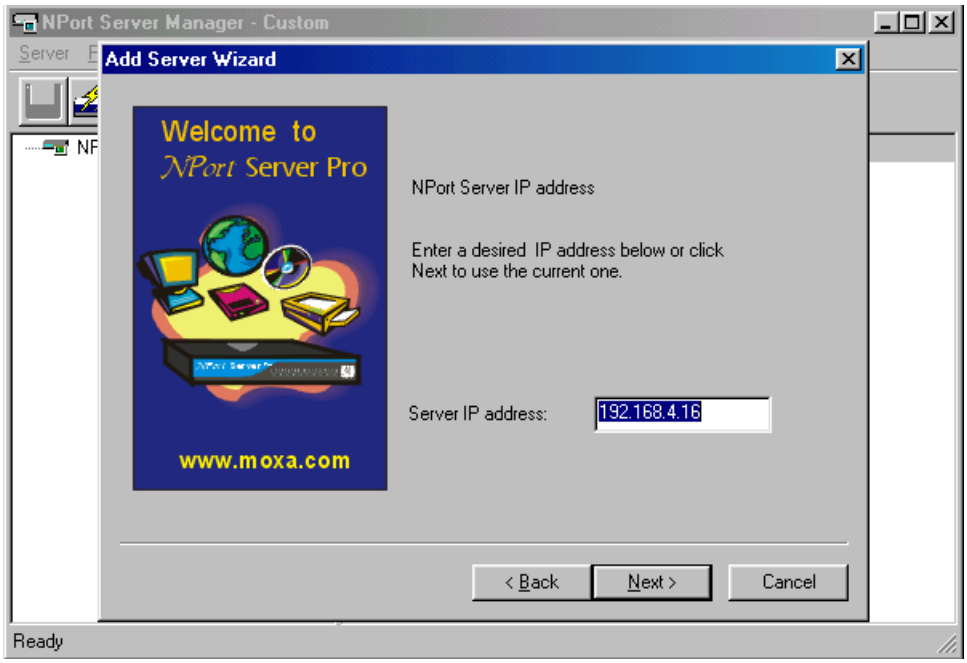
2. Select **Custom** mode, and click on **Next** to continue.

3. Click on **Next** to finish the installation.

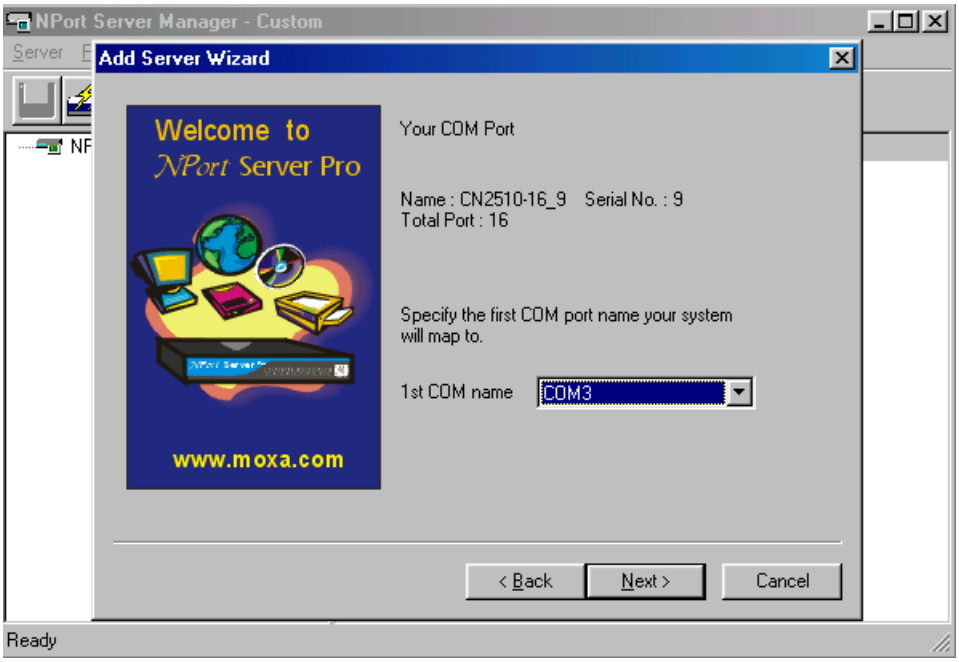
4. After the driver is installed, Add Server Wizard will start to help you configure CN2510. As illustrated below, you can either choose to enter the IP address manually, or use auto search locate servers and select one from the server list. And then click on Next to continue.



5. In the window that opens next, **Add Server Wizard** will ask you to enter CN2510 LAN's IP address. Click on **Next** to continue.

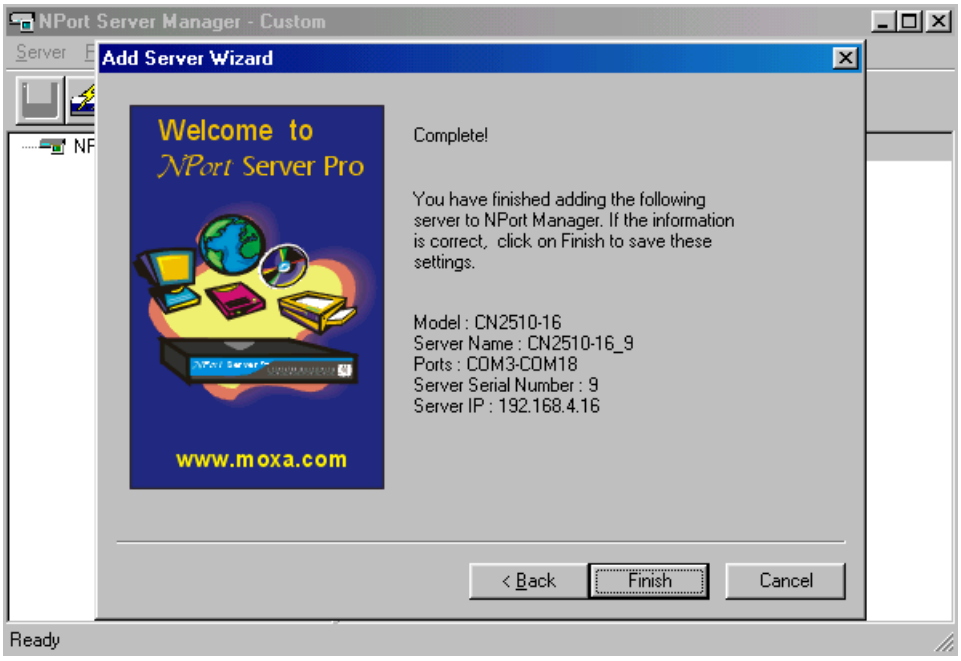


6. Select the corresponding COM Port. The system will automatically map all COM Ports.

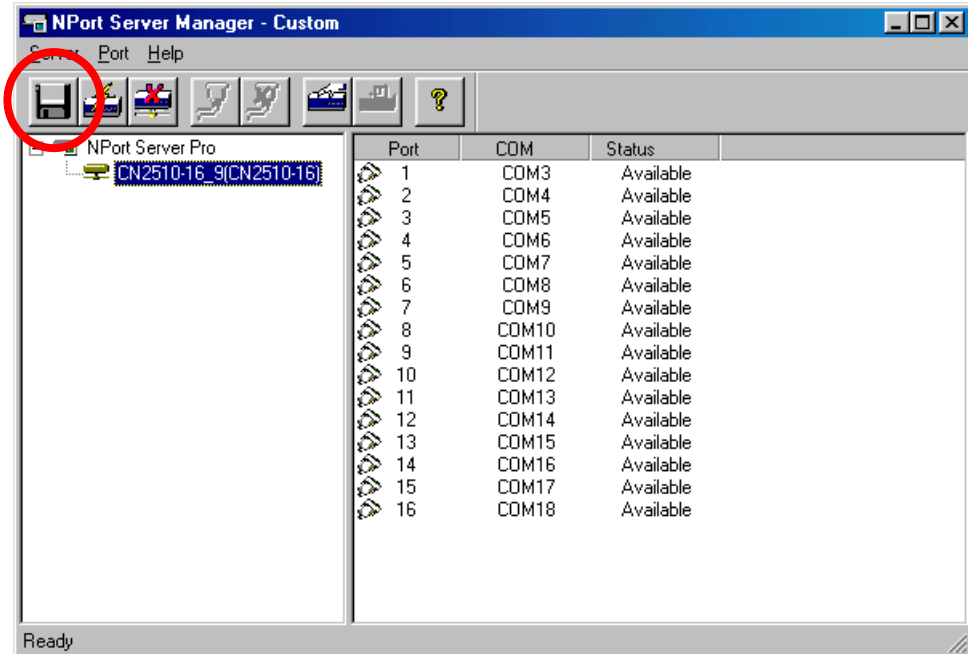


7. The next step is to set the password for this CN2510. Enter the password, and click on Next to continue.

8. Add Server Wizard will show the entire information about CN2510.



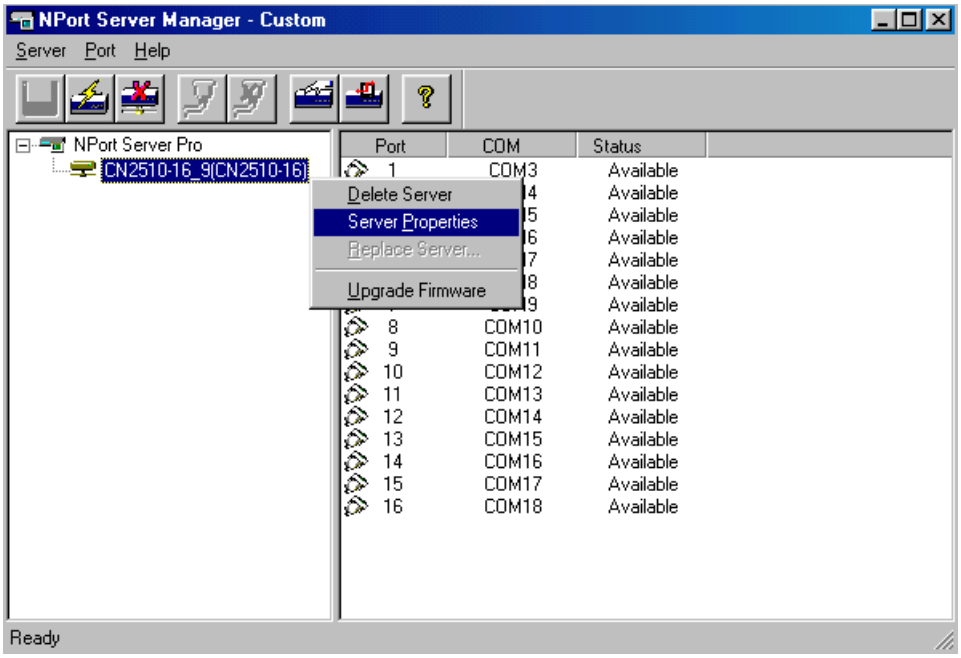
9. You have to save the data after you return to the main page. Click on the disk icon on the upper left corner to map CN2510's serial ports to standard COM ports.



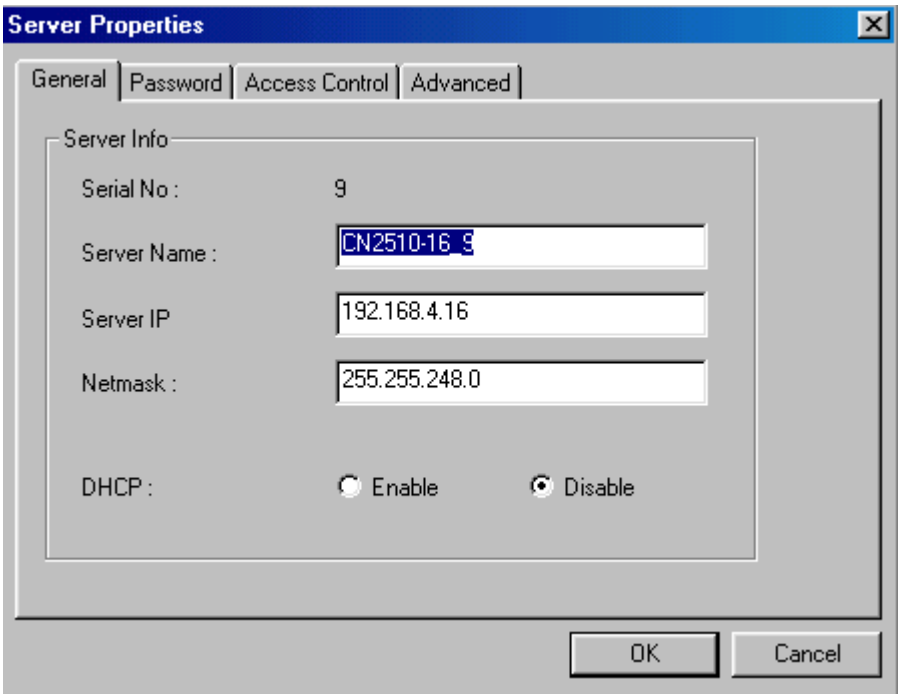
Configuring CN2510 in a Windows 95/98/ME/NT Environment

As soon as CN2510 driver is installed, the driver will guide you through CN2510's configuration. Or you can configure CN2510 later after the driver is installed. Here we will introduce Real COM Mapping configuration.

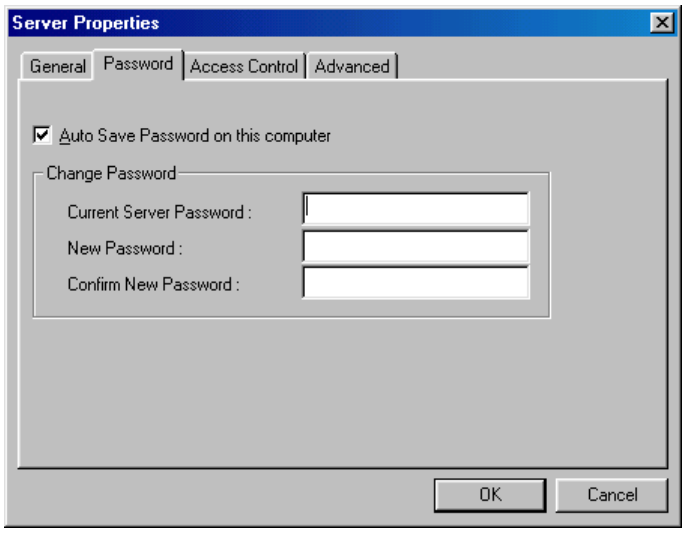
1. From Start/Properties/NPort Server, Click on **NPort Server Manager**. And click which CN2510 you want to setup. Right click it and select **Server Properties** like as follow.



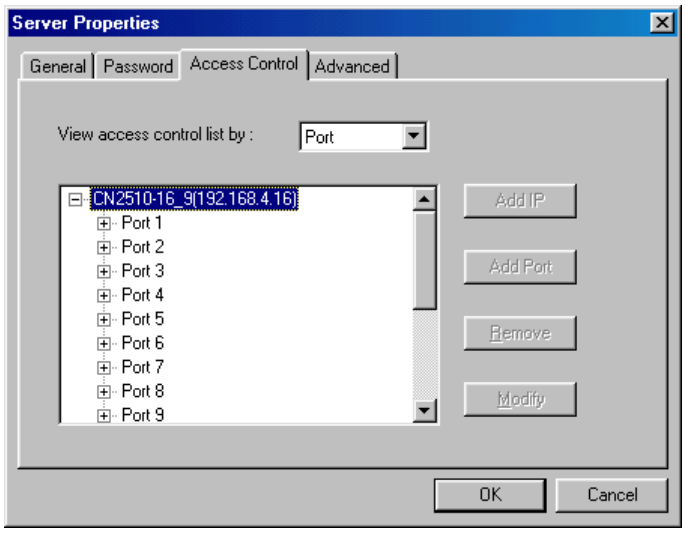
2. In general page, you could see the Server Information here. It's include Serial No., Server Name, Server IP, Netmask, and you also could select this CN2510 want to use DHCP to get a free IP address or fixed IP address.



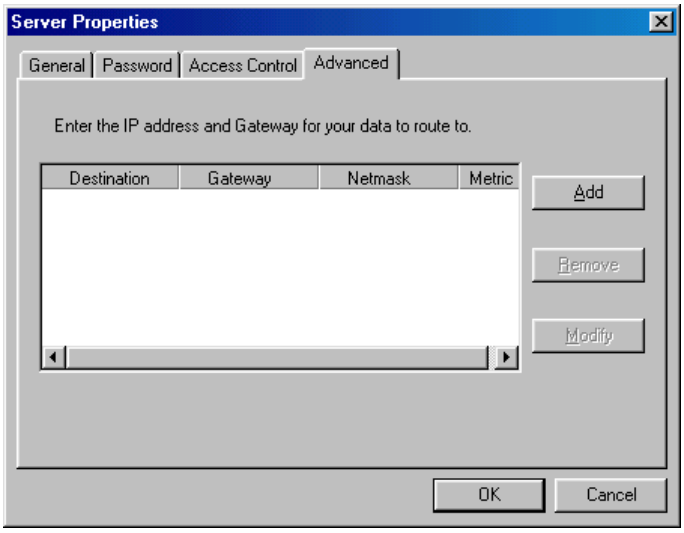
3. In Password page, you could setup the password with this CN2510. It could protect CN2510. Check the **Auto Save Password on this computer** box if you want the Windows 9x or Windows NT operating system to remember your password.



4. In Access Control page, you could add or remove any IP address to allow it access CN2510 or not.



5. In advanced page, you could adding routes to CN2510. In general, CN2510 has a column to setup Default Gateway, so we think you could ignore this configuration.



5

Setting up Device Control

For Device Control application, users can use standard Linux/Unix Socket programming in Linux/Unix or WinSock programming in the Windows environment to directly control devices' data transmission. In this application, users use the standard Socket programming to communicate with the CN2510, and the operation mode used is TCP RAW mode, focusing only on data transmission without serial port control or serial modem signals control. Users can also use ASPP protocol, exclusively provided by Moxa, to communicate with the CN2510.

Whether users use Linux/Unix Socket programming or Windows WinSock programming, IP is used as the communication agent between hosts and devices.

In the end of this chapter, we will use examples to explain how to use ASPP in an UNIX/Windows environment.

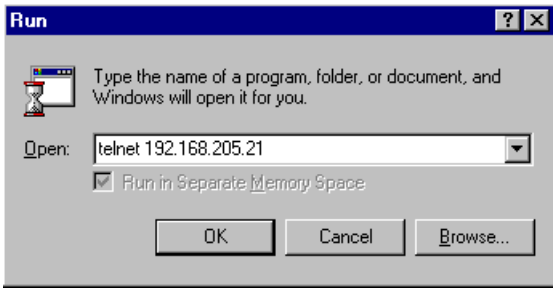
This chapter will introduce the APIs for the following functions:

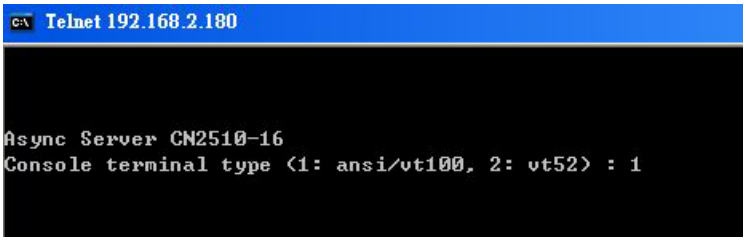
- **Configuring Port Operation Mode – Port Menu [Mode]**
  - **ASPP**
  - **RAW**
- **Configuring Port Connection Setting – Port Menu [Line]**
- **Save**
- **Restart**
- **ASPP Library Introduction**
- **ASPP Examples for Unix**
- **ASPP Examples for Windows**

Configuring Port Operation Mode – Port Menu [Mode]

Open Port Menu→Mode to install NT Real COM mode.

1. To enter CN2510 **MAIN MENU**, use either Telnet from a network terminal, or connect directly to CN2510 Async Server with a console terminal. Select **ansi/vt100**, and then press **Enter**. Refer to chapter 2 for more details about how to enter **MAIN MENU**.

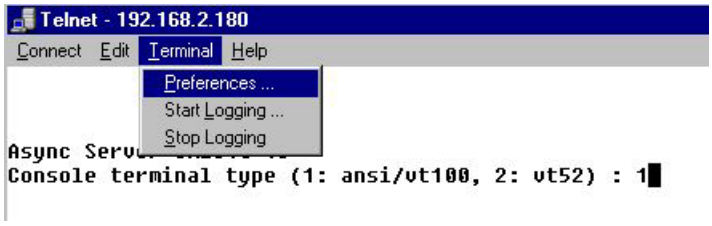


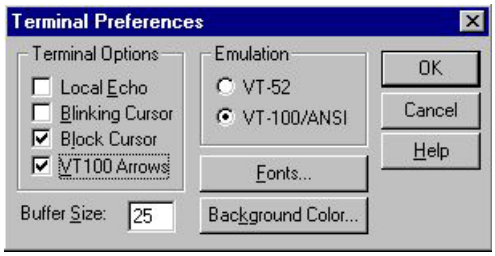


2. The table below is the **MAIN MENU** of CN2510 Async Server. Before you begin, familiarize yourself with the cursor movement functions before starting the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

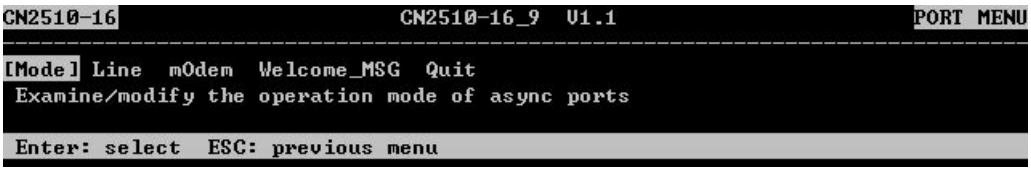
If you have problems using the arrow keys to move the cursor in Windows 9x or NT environment, click on the **Terminal** menu, choose **Preferences**, and then select **VT100 Arrows** in the **Terminal Preferences** window. Click on **OK** to go back to the **MAIN MENU**, and then it can work properly now.



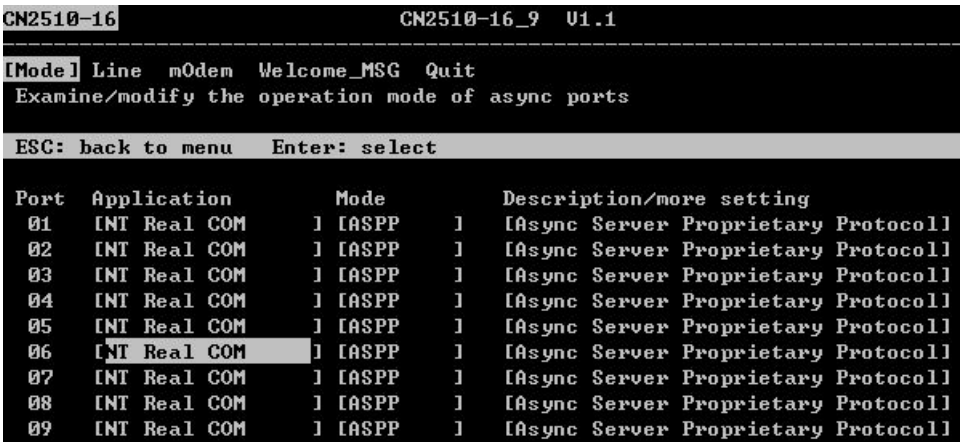


3. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

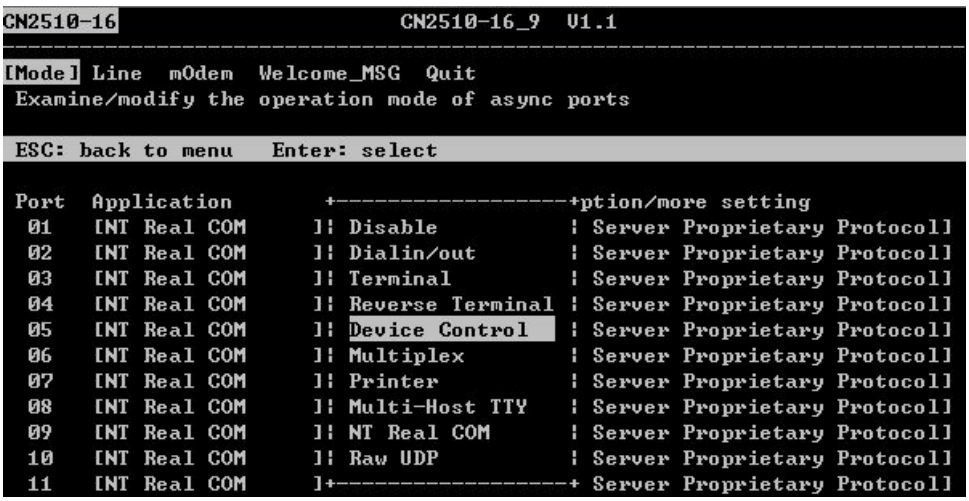
4. In **PORT MENU**, select **Mode**, and then press **Enter**.



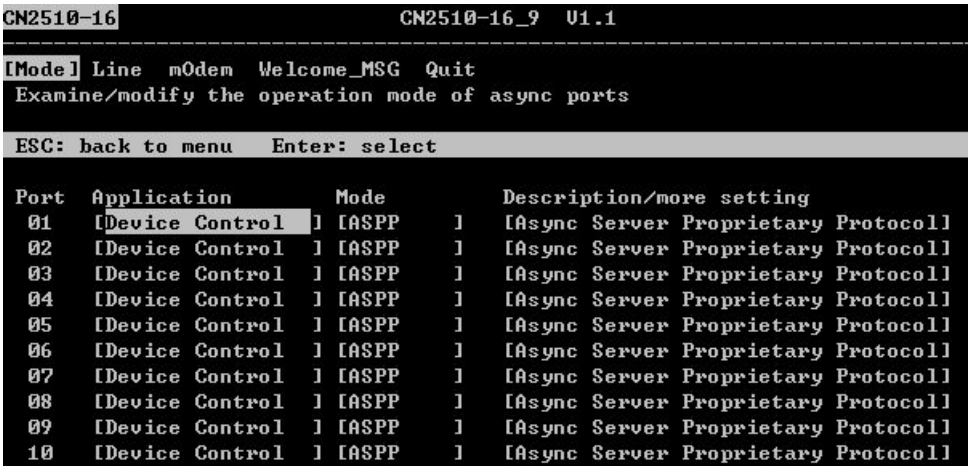
5. In **Mode**, use the arrow keys to move the cursor to the application corresponding to serial ports. Here we use Port 6 as an example.



6. Press **Enter** to open the application window. Use **Up/Down** Arrow keys to select **NT Real COM mode**. Press **Enter** to confirm.



7. Repeat Step 5 to 6 to configure other device control port settings. For example, you can follow the steps described below to configure Port 1 to Port 8 for **Device Control mode** application.



We already selected a application mode for each serial port. Now let's talk about more details on Device Control: CN2510 Device Control's ASPP/RAW mode. ASPP, which is developed by Moxa, provides an easy-to-use TCP/IP socket programming library and other useful functions.

CN2510 RAW mode allows self-definition on applications via serial data transmitted/received over the Ethernet. RAW mode has to be used in the standard TCP/IP socket programming.

ASPP Mode

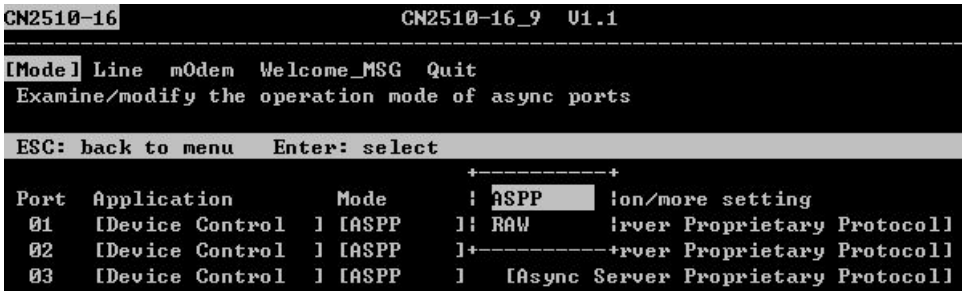
Moxa ASPP is a TCP/IP socket programming library. If you're using Moxa ASPP to program, set CN2510's serial ports as ASPP ports, and copy the ASPP library to the server for further programming. ASPP programming functions and examples are introduced at the end of the chapter.

Each physical ASPP port is divided into two logical ports: one is called command port, the other is called data port. Via command port, users can issue commands across the network to set the line's configuration parameters, such as baud rate, data bits, flow control condition, etc. Via data port, users can retrieve data through the async line.

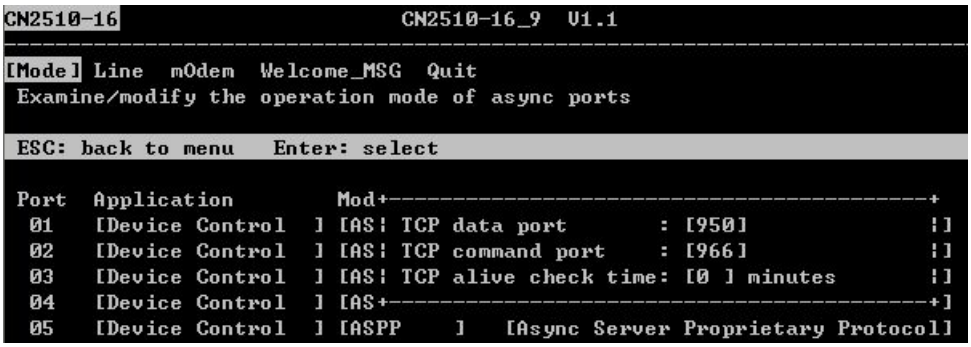
There is a unique TCP port number associated with each ASPP command and data port. The TCP port number is defined as follows:

CN2510 Port No.	TCP Data Port No.	TCP Command Port No.
01	950	966
02	951	967
03	952	968
04	953	969
05	954	970
06	955	971
07	956	972
08	957	973
09	958	974
10	959	975
11	960	976
12	961	977
13	926	978
14	963	979
15	964	980
16	965	981

1. Move the cursor to the **Mode** column of the corresponding port, and then press **Enter** to see 2 modes for **Device Control** applications: ASPP and RAW. Please select **ASPP** Mode.



2. Move the cursor to the **Description/more setting** column, and then press **Enter** to open the setting window. Each serial port has an individual TCP data port number and TCP command port number. You can set the frequency for **TCP alive check time** here.



Setting	Value	Notes	Necessity
TCP port	number	Via data port, users can retrieve data through the async line.	Yes
TCP command port	number	Via command port, users can issue commands across the network to set the line's configuration parameters, such as baud rate, data bits, flow control condition, etc.	Yes
TCP alive check time	0-99 minute	Specify the time slice for checking whether the TCP connection is alive. If no response, CN2510 will reset the port and disconnect the original connection.	Optional

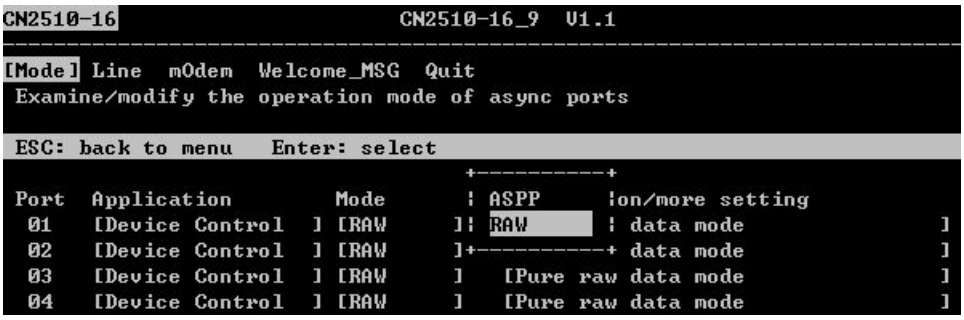
3. Users can also configure TCP alive check time here.

4. Press **Esc** to go back to **PORT MENU**.

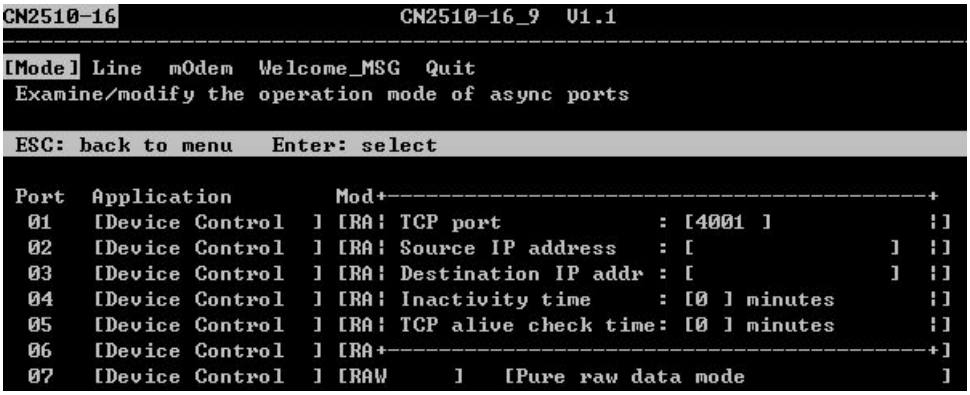
RAW Mode

RAW mode is used for standard TCP/IP socket programs. RAW mode provides a transparent communication link between the network socket program and the corresponding Async port.

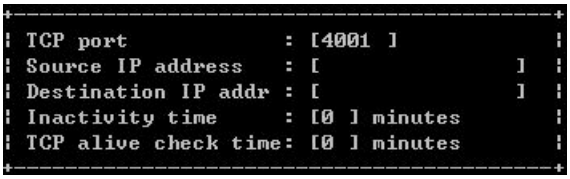
1. Move the cursor to the **Mode** column of the corresponding port, and then press **Enter** to see two modes for async device control applications: ASPP and RAW. Please select **RAW** Mode.



2. Move the cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.



3. **RAW Description/more setting** Window



Setting	Value	Notes	Necessity
TCP port	number	Each of CN2510's serial ports is mapped to a TCP port. To avoid conflicts with TCP ports, set the port numbers to 4001 for port1, 4002 for port2, etc., (like the default value).	Optional
Source IP address	IP address for the port	Specify an IP address for this port for application needs. If left blank, CN2510 will specify its own IP address, so you will need to a select a different TCP port number to avoid conflicts.	Optional
Destination IP	IP address	Assign a host IP address on the LAN for	Optional

addr		exclusive port access. If left blank, all hosts on the network will have access to this port.	
Inactivity time	0-99 minutes	Idle time setting for auto-disconnection 0 min means no disconnection	Optional
TCP alive check time	0-99 minutes	Specify the time slice for checking whether the TCP connection is alive. If no response, CN2510 will reset the port and disconnect the original connection.	Optional

4. Repeat the above steps to set all RAW ports.

5. Press **Esc** to go back to **PORT MENU**.

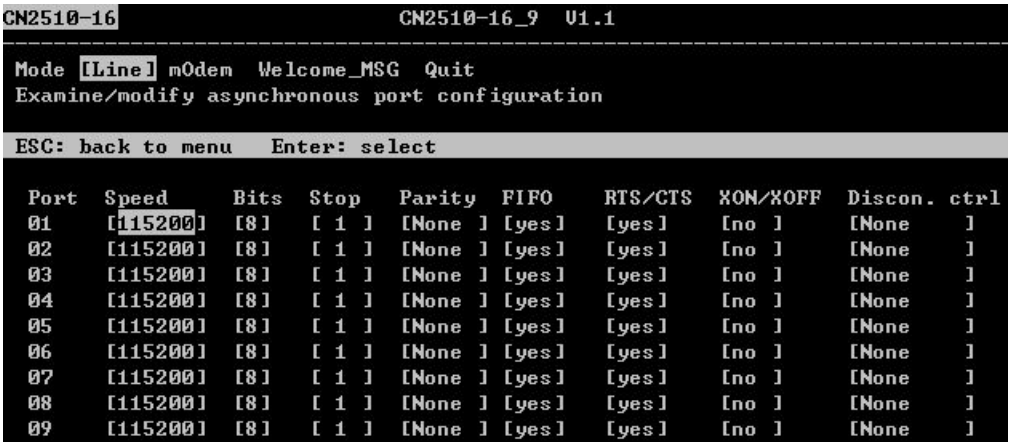
Configuring Port Setting – Port Menu [Line]

In **PORT MENU [Line]**, you can set line settings for the particular type of device being used.

1. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

2. In **PORT MENU**, select **Mode**, and then press **Enter**.

3. Select the ports and configure the settings.



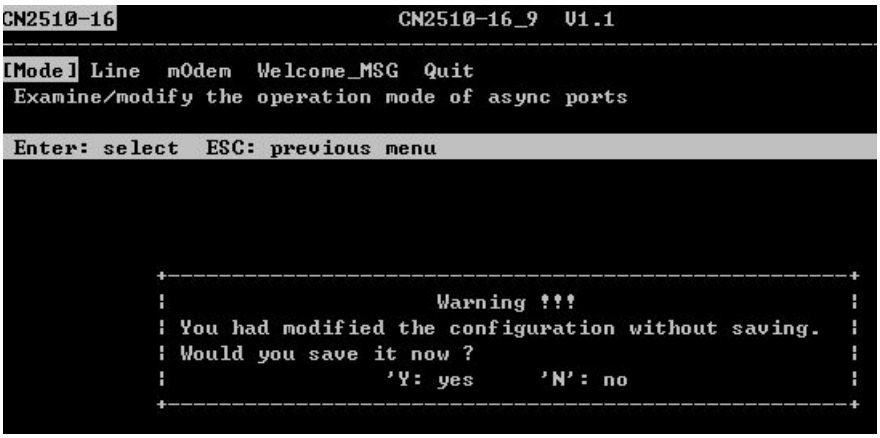
Setting	Value	Notes
Speed	50 bps to 230.4 Kbps	Baud rate
Bits	5/6/7/8	Data bits
Stop	1/2	Stop bits
Parity	None, Even, Odd, Mark, Space	Parity Check
FIFO	Yes/No	FIFO setting
RTS/CTS	Yes/No	Hardware Flow Control
XON/XOFF	Yes/No	Software Flow Control
Discon. ctrl	None/DSR off/DCD off	Disconnection condition when DSR or DCD signal is off

4. Repeat the step above to configure all functions.

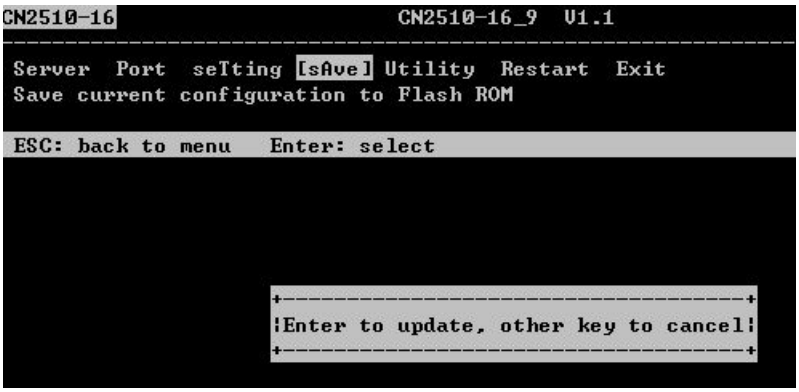
5. Press **ESC** to return the **Port Menu**.

Save

1. Press **Y** to save previous settings when exiting **PORT MENU**.

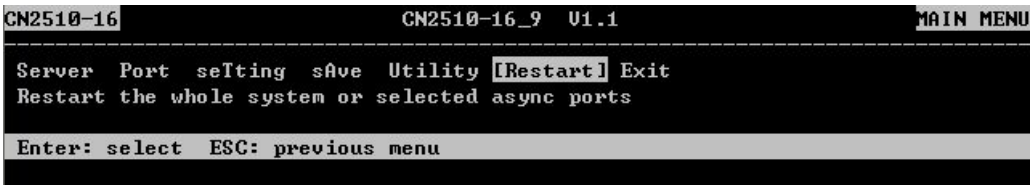


2. You may also save later. In **MAIN MENU**, select **sAve** to save all changed settings, and then press **Enter** to confirm.

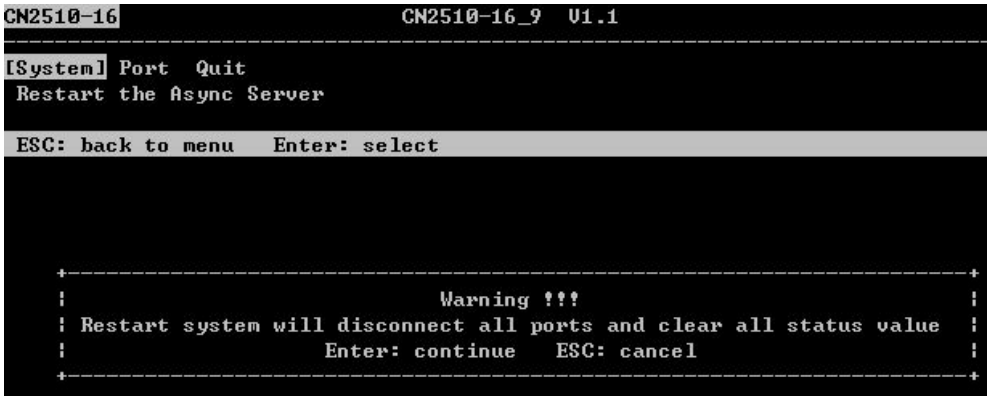


Restart

1. Return to **MAIN MENU** and select **Restart**.



2. Select **System**, and then press **Enter** to continue.



3. The system will restart and the Telnet/Console session will terminate. Enter **MAIN MENU** again to check whether the settings have been changed.

ASPP Library Introduction

The CN2510 software CD contains example programs that illustrate how to successfully control the ASPP port. After uncompressing the file `ASPP.tar.z`, you will be able to find several basic subroutines in the `\aspp\as.h` folder.

Useful subroutines to control "ASPP" port

1. **sio_init()**- start ASPP Library
2. **sio_open(ipaddr, p)**- open serial port
3. **sio_close(fd)**- close serial port
4. **sio_ioctl(fd, baud, mode)**- configure serial port's baud rate, and even/odd etc
5. **sio_baud(fd, baud, mode)**- configure serial port's baud rate
6. **sio_flowctrl(fd, mode)**- configure hardware and/or software flow control
7. **sio_lctrl(fd, mode)**- line control.
8. **sio_lstatus(fd)**- check line status
9. **sio_flush(fd, func)**- clear input/output buffer
10. **sio_write(fd, buf, len)**- write data
11. **sio_read(fd, buf, len)**- read data
12. **sio_break(fd, time)**- send break signals
13. **sio_oqueue(fd)**- check how many data still in output buffer
14. **sio_iqueue(fd)**- check how many data in input buffer

ASPP Examples for Unix

In general, controlling devices attached to ASPP ports involves using the following procedures:

1. Create a socket for command port and connect to it.
2. Set the port configuration, e.g. baud rate, via command port.

3. Create a socket for data port and connect to it.
4. Transfer data via data port.

This example program continually sends the string “1234567890” to CN2510’s ASPP port and then reads back data when program ends.

Setting:

Target port: no parity, 8 data bits, 1 stop bit, software (XON/XOFF) flow control, no hardware (RTS/CTS).

Syntax: # ./example ConsoleServerName [port(1) [Baud(9600)]]

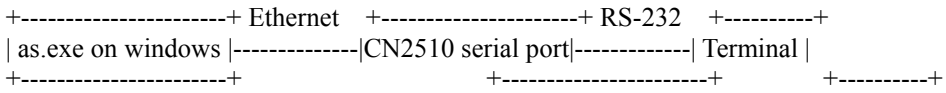
For example:

./example CN2510 1 19200

Program sends “1234567890” to port 1 at 19200 bps baud rate and reads back any data on it. Environment: SCO UNIX. If you’re using another system, modify by including the file name and other variables.

ASPP Examples for Windows

1. Program testing environment:



2. This program works like a dumb terminal. It sends all characters pressed on the keyboard to a remote connection, and then echoes the data to the screen.
3. This program sends '\r' as '\r\n' and '\n' as '\r\n'.
4. All CN2510 ASPP functions are defined in the file as.h.
5. This program can work on Windows 9x/NT/2000/XP/2003 as a dumb terminal. After completing the connection to CN2510, serial port will send all characters pressed on the keyboard to the remote connection, and then echo the data to the screen. Then, the program will send ‘12345’ to port 1 and Async Server at 19200 bps baud rate and read back any data on it.

6

Setting up UDP Communication

UDP is a non connection-oriented data transmission method. UDP has advantages of high speed and high data transmission efficiency, eliminating TCP's handshaking process. But it comes with the price of sacrificing data integrity. UDP doesn't have the functions of re-assembling and retransmitted packets like TCP when data is missing. When data needs to be transmitted fast to the Ethernet, and application software at the upper level can be responsible for data's correctness, the UDP is a very ideal transmission method.

CN2510's UDP mode supports 4 configurable groups, using UDP mode to send serial device data to the 4 IP addresses groups on the network.

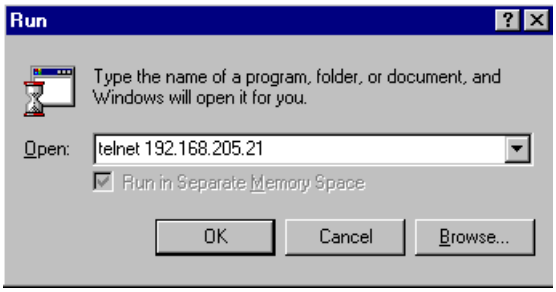
Here we introduce how to set up UDP communication via CN2510.

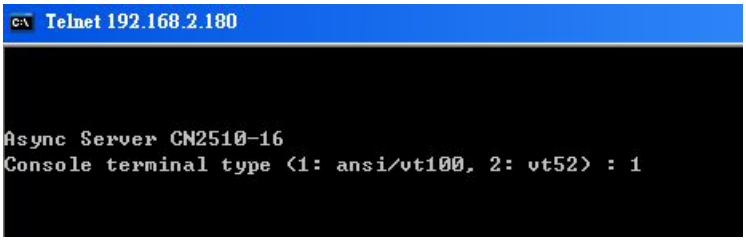
- **Configuring Port Operation Mode – Port Menu [Mode]**
  - **UDP**
- **Configuring Port Connection Setting – Port Menu [Line]**
- **Save**
- **Restart**

Configuring Port Operation Mode – Port Menu [Mode]

Open Port Menu→Mode to install NT Real COM mode.

1. To enter CN2510 **MAIN MENU**, use either Telnet from a network terminal, or connect directly to CN2510 Async Server with a console terminal. Select **ansi/vt100**, and then press **Enter**. Refer to chapter 2 for more details about how to enter **MAIN MENU**.

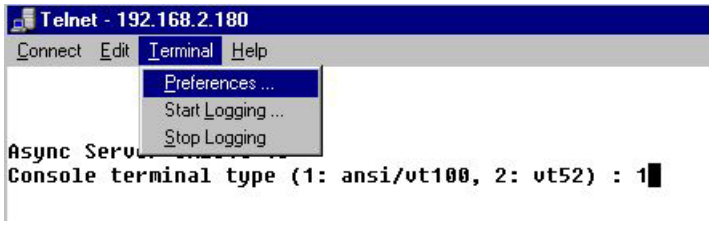


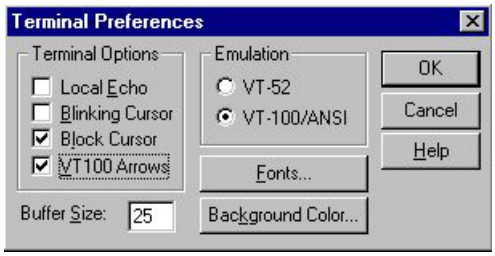


2. The table below is the **MAIN MENU** of CN2510 Async Server. Before you begin, familiarize yourself with the cursor movement functions before starting the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

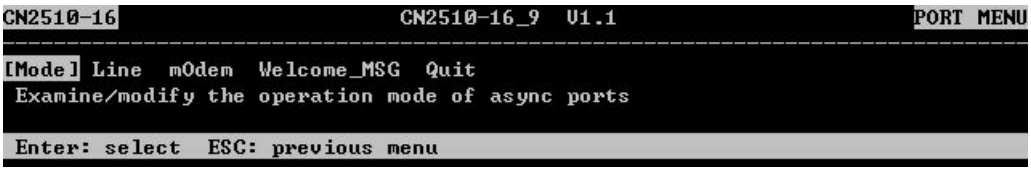
If you have problems using the arrow keys to move the cursor in Windows 9x or NT environment, click on the **Terminal** menu, choose **Preferences**, and then select **VT100 Arrows** in the **Terminal Preferences** window. Click on **OK** to go back to the **MAIN MENU**, and then it can work properly now.



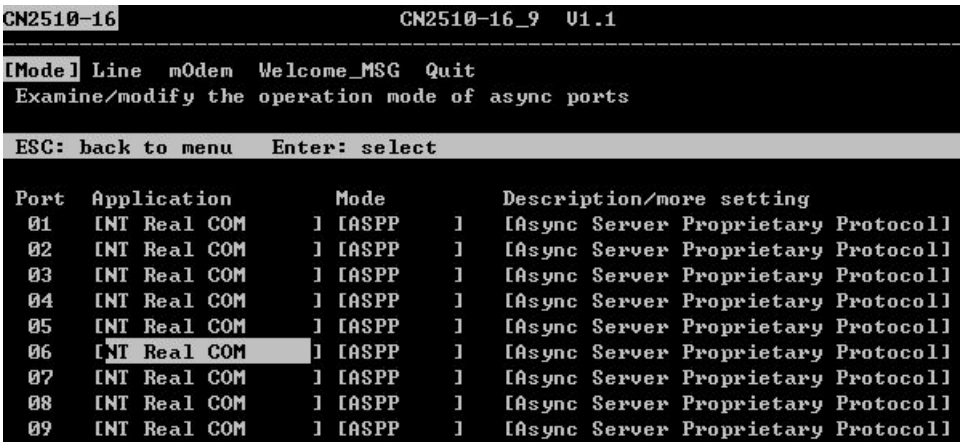


3. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

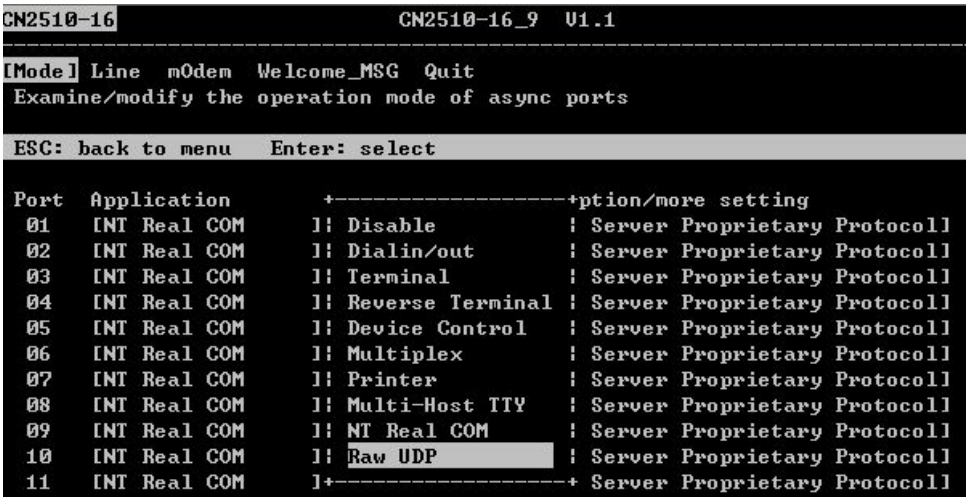
4. In **PORT MENU**, select **Mode**, and then press **Enter**.



5. In **Mode**, use the arrow keys to move the cursor to the application corresponding to serial ports. Here we use Port 6 as an example.



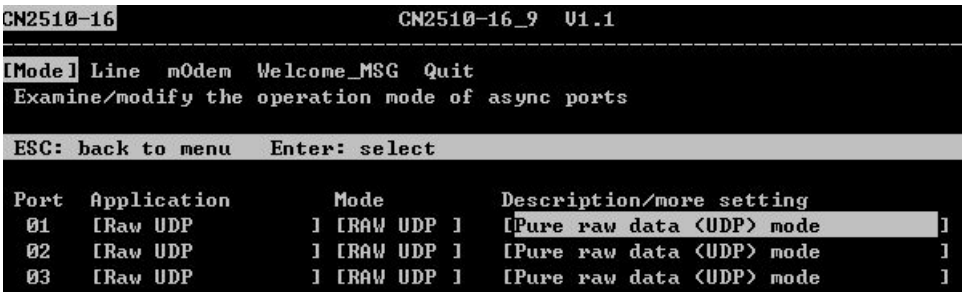
6. Press **Enter** to open application window. Use up/down arrow keys to select **Raw UDP**, and then press Enter to confirm.



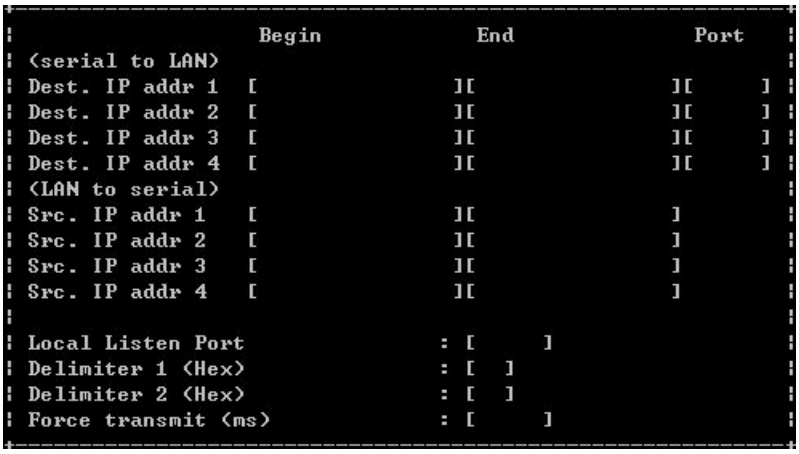
7. Repeat Step 6 to configure port settings. For example, you can follow the steps described below to configure Port 1 to Port 16 for **Raw UDP mode** application.

Raw UDP Mode

1. Move the cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.



2. **UDP Description/more setting** Window.



Setting	Value	Notes	Necessity
Dest. IP address 1	The IP address range to which the target data is sent. e.g. Begin: 192.168.1.1 End: 192.168.1.64	UDP packets will be sent consecutively from the first IP address to the last one. As stated on the left column, the packets will be sent to 64 IP addresses.	Yes
Dest. IP address 2/3/4	The IP address range to which the target data is sent. e.g. Begin: 192.168.2.1 End: 192.168.2.64	UDP packets will be sent consecutively from the first IP address to the last one. As stated on the left column, the packets will be sent to 64 IP addresses.	Optional
Src. IP address 1	IP address range permitted for receiving data from the network. e.g. Begin: 192.168.3.1 End: 192.168.3.64	The Legal IP addresses for receiving UDP packets. As stated on the left column, there are UDP packets from 64 IP addresses in total will be received and sent to serial ports.	Yes

Src. IP address 2/3/4	IP address range permitted for receiving data from the network. e.g. Begin: 192.168.4.1 End: 192.168.4.64	The Legal IP addresses for receiving UDP packets. As stated on the left column, there are UDP packets from 64 IP addresses in total will be received and sent to serial ports.	Optional
Local Listen Port	1-65535	The UDP port that CN2510 listens to, and those other devices must use to contact CN2510. To avoid conflicts with well-known UDP ports, the default is set to 4001.	Yes
Delimiter 1 <Hex>	00-FF	Once the CN2510 receives delimiters through its serial port, it immediately packs all data currently in its buffer and sends it out the CN2510's Ethernet port.	Optional
Delimiter 2 <Hex>	00-FF	Once the CN2510 receives delimiters through its serial port, it immediately packs all data currently in its buffer and sends it out the CN2510's Ethernet port. Note: Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. In addition, if the data received is over 1K, no matter Delimiters are received or not, they all will be packed and sent to the network via UDP mode.	Optional
Force transmit <ms>	0-65535	0: Disable this function. 1 to 65535: Forces the CN2510 to try to pack serial data received during the specified time into the same data frame via UDP mode. Optimal force transmit timeout differs according to your application, but it must be at least as large as one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and none for parity. In this case, the total number of bits required to send a character is 10 bits and the time required to transfer one character is 10 (bits) / 1200 (bits/s) * 1000 (ms/s) = 8.3 ms. Therefore, you should set the Force Transmit timeout to be larger than 8.3 ms. Force Transmit timeout is specified in milliseconds and must be larger than 10 ms. If the user wants to send a series of characters in a packet, the serial device attached to CN2510 should send characters without time delay larger than	Optional

		Force Transmit timeout between characters and the total length of data must be smaller than or equal to CN2510's internal buffer size. The serial communication buffer size of CN2510 is 1 K byte per port.	

3. Repeat the steps above to set up all **Raw UDP** ports.

4. Press **ESC** to return to **PORT MENU**.

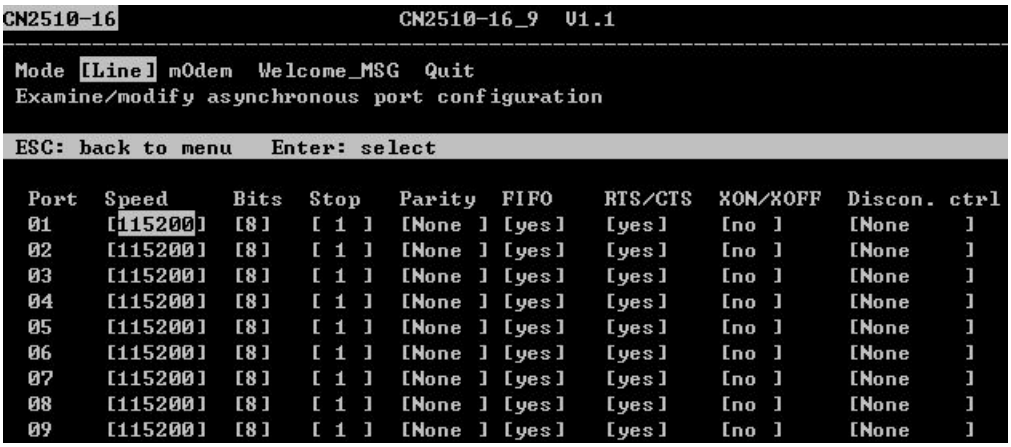
Configuring Port Setting – Port Menu [Line]

In **PORT MENU [Line]**, you can set line settings for the particular type of device being used.

1. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

2. In **PORT MENU**, select **Mode**, and then press **Enter**.

3. Select the ports and configure the settings.



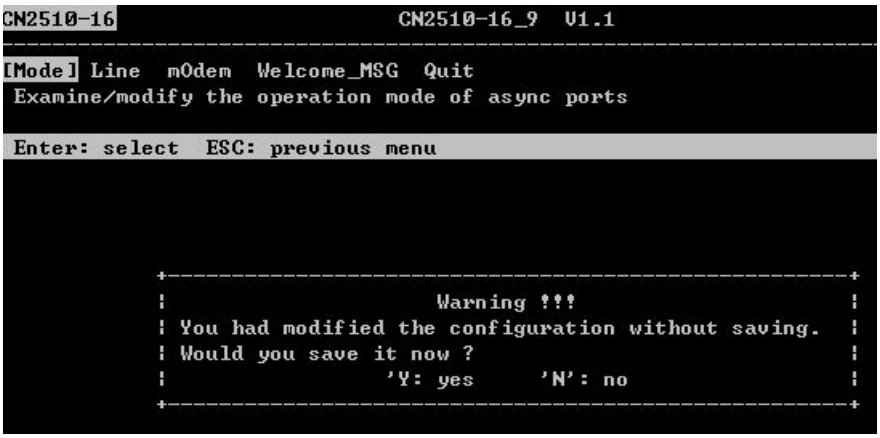
Setting	Value	Notes
Speed	50 bps to 230.4 Kbps	Baud rate
Bits	5/6/7/8	Data bits
Stop	1/2	Stop bits
Parity	None, Even, Odd, Mark, Space	Parity Check
FIFO	Yes/No	FIFO setting
RTS/CTS	Yes/No	Hardware Flow Control
XON/XOFF	Yes/No	Software Flow Control
Discon. ctrl	None/DSR off/DCD off	Disconnection condition when DSR or DCD signal is off

4. Repeat the step above to configure all functions.

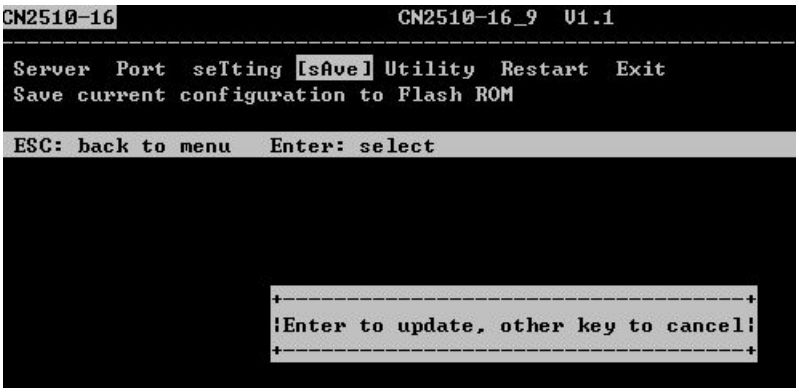
5. Press **ESC** to return the **Port Menu**.

Save

3. Press **Y** to save previous settings when exiting **PORT MENU**.

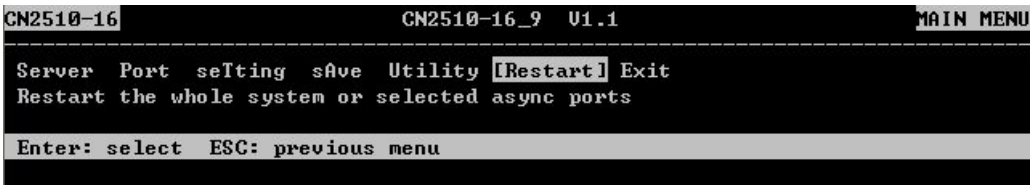


4. You may also save later. In **MAIN MENU**, select **sAve** to save all changed settings, and then press **Enter** to confirm.

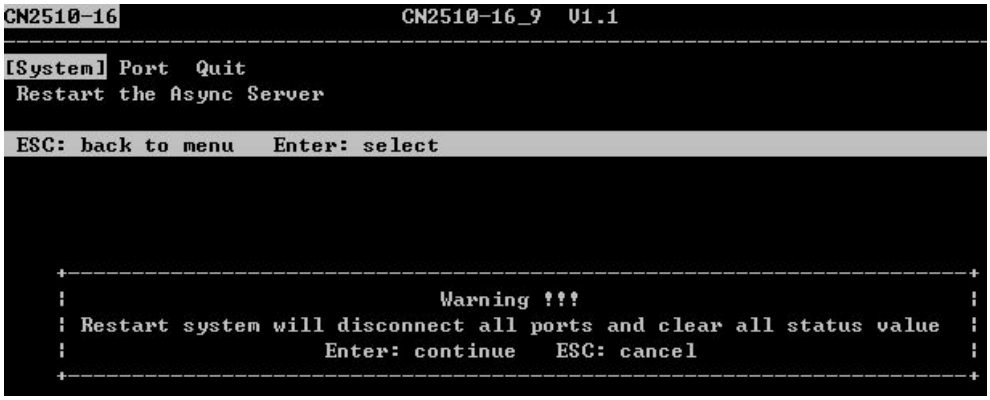


Restart

1. Return to **MAIN MENU** and select **Restart**.



2. Select **System**, and then press **Enter** to continue.



3. The system will restart and the Telnet/Console session will terminate. Enter **MAIN MENU** again to check whether the settings have been changed.

7

Setting up Console Management

This chapter includes information about how to set up CN2510 Async Server, allowing the terminal on the Ethernet to access CN2510' serial ports.

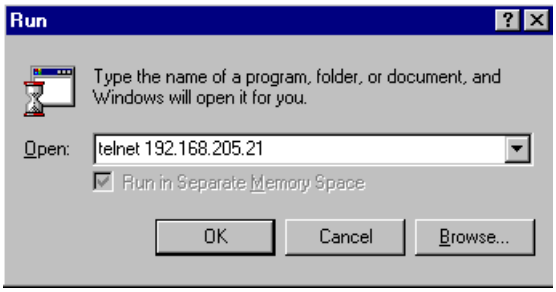
This chapter will introduce the APIs for the following functions:

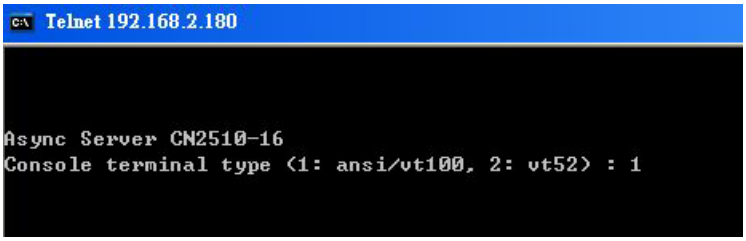
- **Configuring Port Operation Mode – Port Menu [Mode]**
  - **RTelnet Mode**
- **Configuring Port Connection Setting – Port Menu [Line]**
- **Optional Modem Initialization – Port Menu [Modem]**
- **Save**
- **Restart**

Configuring Port Operation Mode – Port Menu [Mode]

Open Port Menu→Mode to install NT Real COM mode.

1. To enter CN2510 **MAIN MENU**, use either Telnet from a network terminal, or connect directly to CN2510 Async Server with a console terminal. Select **ansi/vt100**, and then press **Enter**. Refer to chapter 2 for more details about how to enter **MAIN MENU**.

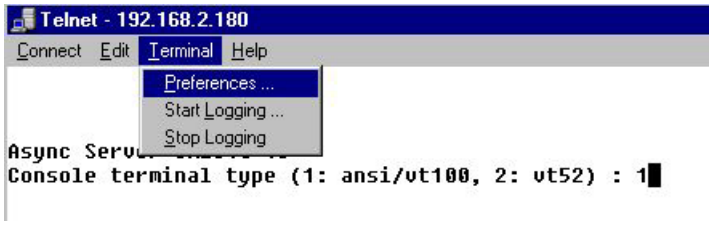


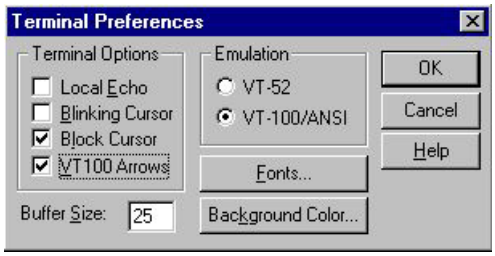


2. The table below is the **MAIN MENU** of CN2510 Async Server. Before you begin, familiarize yourself with the cursor movement functions before starting the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

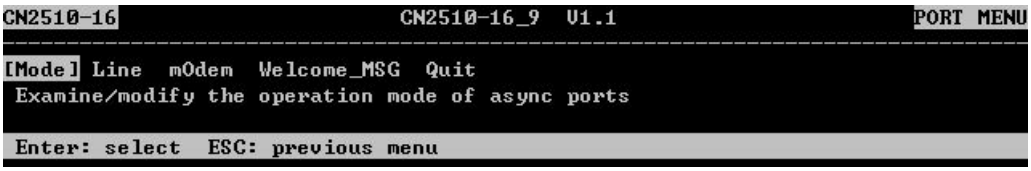
If you have problems using the arrow keys to move the cursor in Windows 9x or NT environment, click on the **Terminal** menu, choose **Preferences**, and then select **VT100 Arrows** in the **Terminal Preferences** window. Click on **OK** to go back to the **MAIN MENU**, and then it can work properly now.



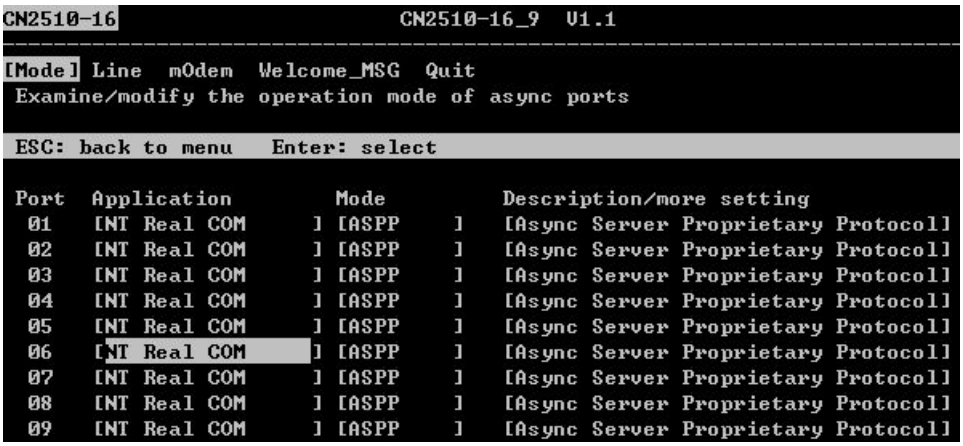


3. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

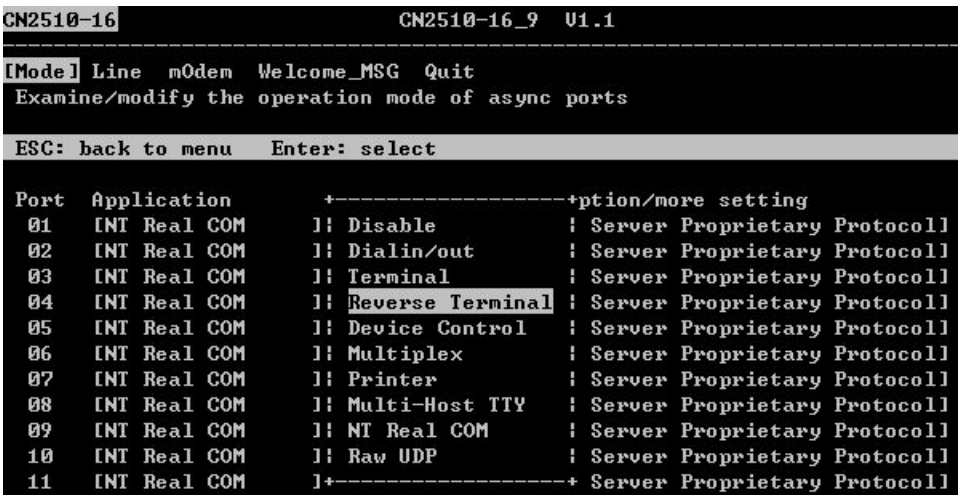
4. In **PORT MENU**, select **Mode**, and then press **Enter**.



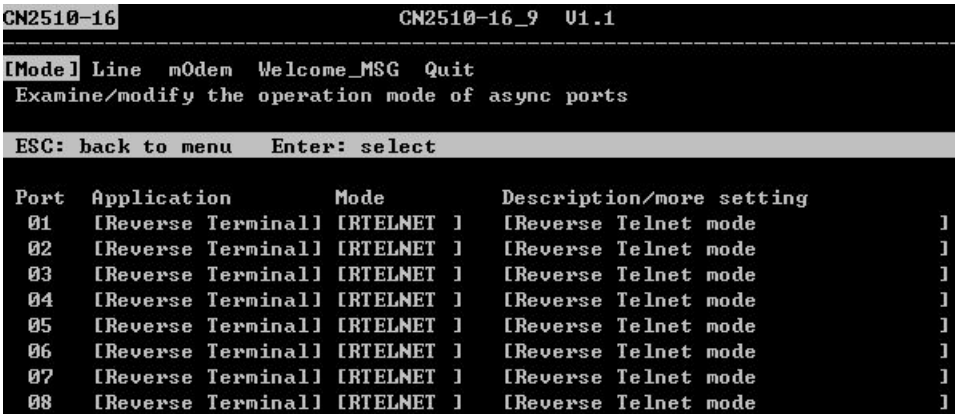
5. In **Mode**, use the arrow keys to move the cursor to the application corresponding to serial ports. Here we use Port 6 as an example.



6. Press **Enter** to open application window. Use up/down arrow keys to select **Reverse Terminal**, and then press **Enter** to confirm.



7. Repeat Step 6 to configure port settings. For example, you can follow the steps described below to configure Port 1 to Port 16 for **Reverse Terminal mode** application.

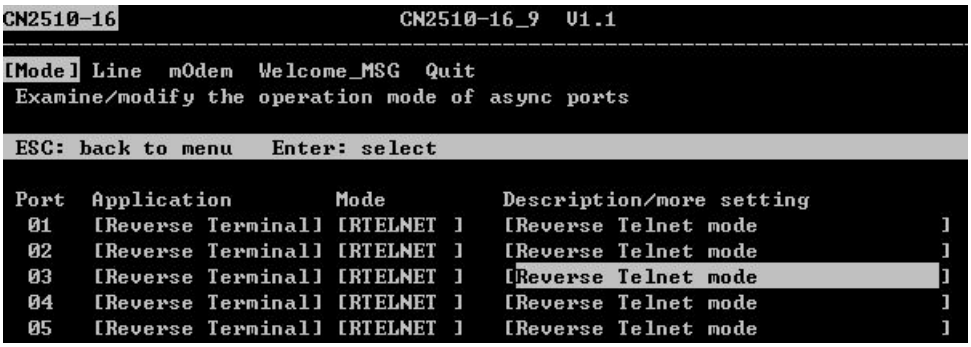


CN2510 provides an **RTELNET** mode for the reverse terminal application. **RTELNET** mode allows Ethernet hosts to access serial hosts attached to CN2510's serial ports, the reverse direction provided by CN2510's terminal application.

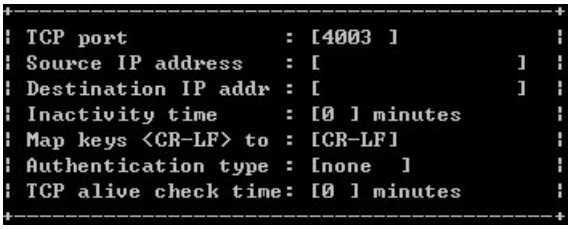
RTelnet Mode

Reverse Telnet, or RTELNET, supports the Telnet program used by Ethernet hosts to login to serial hosts. Ethernet hosts recognize serial ports by the specified source IP address, or by the TCP port number followed by CN2510's IP address.

1. Move the cursor to the **Description/more setting** column, and then press **Enter** to open the setting window. Each serial port has its own TCP data port number and TCP command port number.



2. **RTELNET Description/More Setting** window.



Setting	Value	Notes	Necessity
TCP port	number	Each of CN2510's serial ports is mapped to a TCP port. To avoid conflicts with TCP ports, set port numbers to 4001 for port1, 4002 for port2, etc. (like the default values).	Optional
Source IP address	IP address for the port	Specify an IP address for this port for application needs. If left blank, CN2510 will specify its own IP address, so you will need to set different TCP port numbers to avoid conflicts.	Optional
Destination IP addr	IP address	Assign a host IP address on the LAN for exclusive port access. If left blank, all hosts on the network will have access to this port.	Optional
Map Keys <CR-LF> to	CR/LF/CR-LF	When you enter <CR-LF> string, CN2510 will determine whether to send <CR>, <LF>, or <CR-LF>.	Optional
Inactivity time	0-99 minutes	Idle time setting for auto-disconnection. 0 min means no disconnection.	Optional
Authentication type	None/local /server	None: no certification needed. Local: Check the ID according to the User_table in SERVER MENU. Server: Check ID according to the external RADIUS server. Refer to Appendix C for RADIUS installation.	Optional
TCP alive check time	0-99 minutes	Specify the time slice for checking whether the TCP connection is alive. If no response, CN2500 will reset the port and disconnect the original connection.	Optional

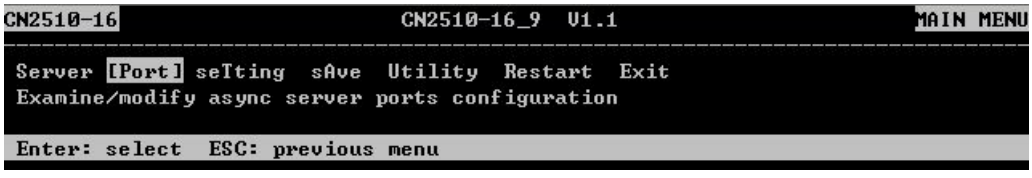
3. Repeat the steps above to set all RTELNET ports.

4. Press **Esc** to return to **PORT MENU**.

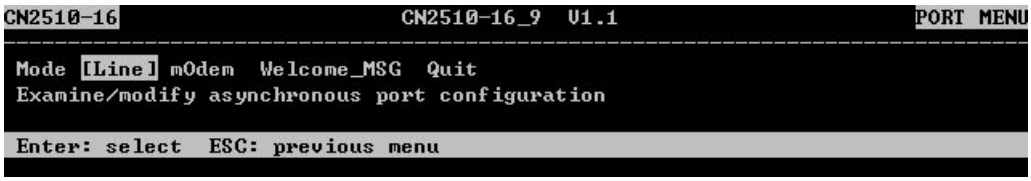
Configuring Port Setting – Port Menu [Line]

In **PORT MENU [Line]**, you can set line settings for the particular type of device being used.

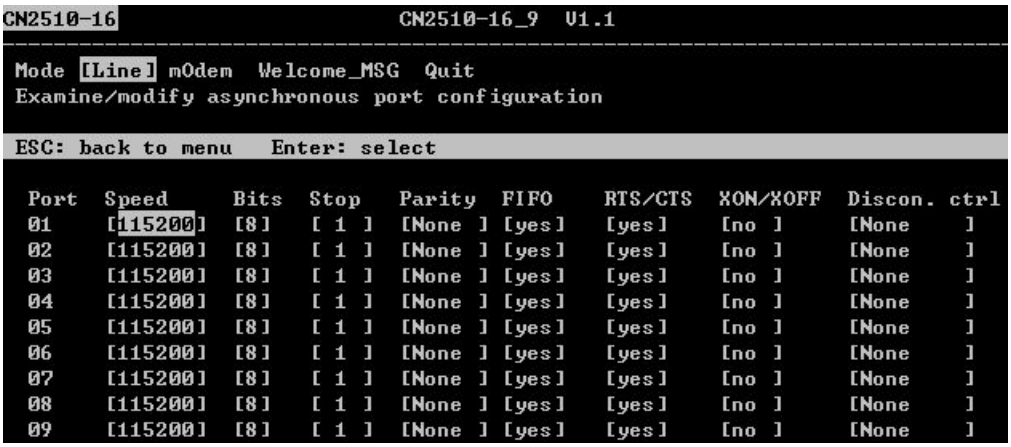
1. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.



2. In **PORT MENU**, select **Mode**, and then press **Enter**.



3. Select the ports and configure the settings.



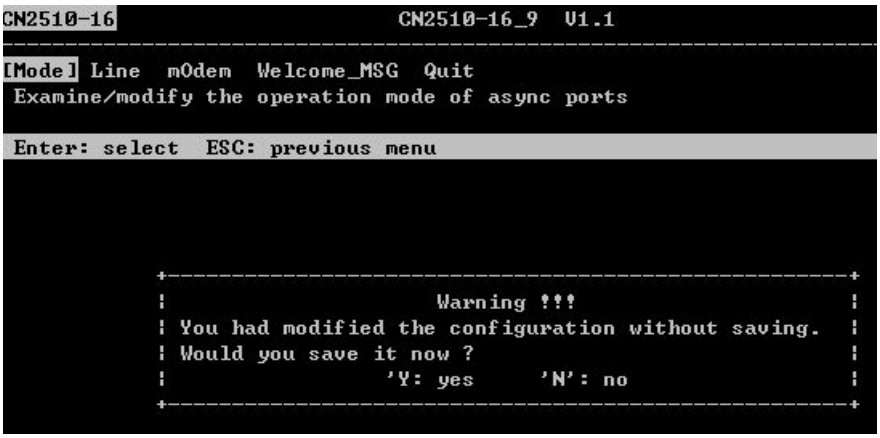
Setting	Value	Notes
Speed	50 bps to 230.4 Kbps	Baud rate
Bits	5/6/7/8	Data bits
Stop	1/2	Stop bits
Parity	None, Even, Odd, Mark, Space	Parity Check
FIFO	Yes/No	FIFO setting
RTS/CTS	Yes/No	Hardware Flow Control
XON/XOFF	Yes/No	Software Flow Control
Discon. ctrl	None/DSR off/DCD off	Disconnection condition when DSR or DCD signal is off

4. Repeat the step above to configure all functions.

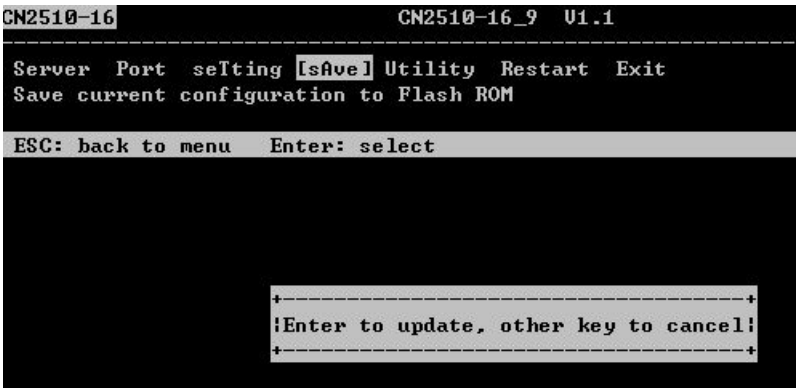
5. Press **ESC** to return the **Port Menu**.

Save

1. Press **Y** to save previous settings when exiting **PORT MENU**.

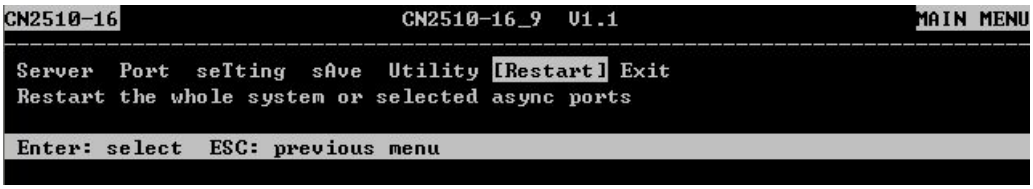


2. You may also save later. In **MAIN MENU**, select **sAve** to save all changed settings, and then press **Enter** to confirm.

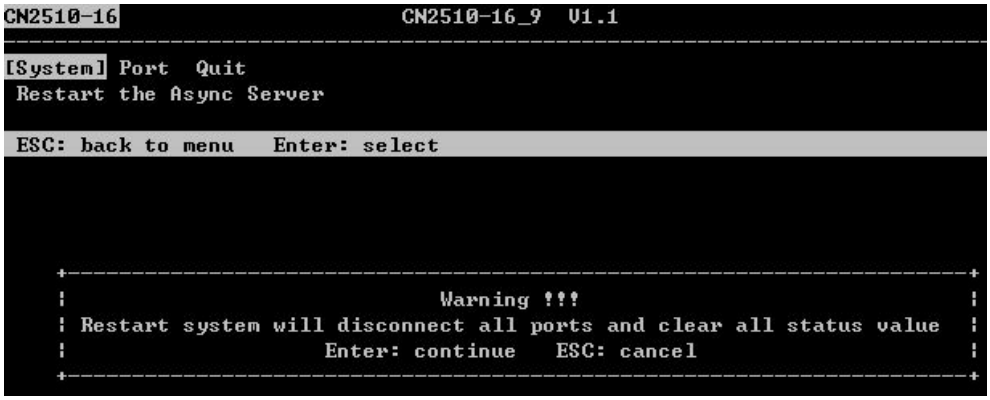


Restart

1. Return to **MAIN MENU** and select **Restart**.



2. Select **System**, and then press **Enter** to continue.



3. The system will restart and the Telnet/Console session will terminate. Enter **MAIN MENU** again to check whether the settings have been changed.

8

Setting up Terminal Access

We describe here the steps for configuring Moxa CN2510 as a Terminal Server. CN2510 provides Telnet and Rlogin protocols for terminals to establish connections with UNIX hosts. Two terminal modes are supported, ASCII terminal with up to 8 simultaneous sessions, and Binary terminal with one session for one user. Terminals can either be connected directly to one of CN2510's RS-232 ports, or connected from a distance by using external modems.

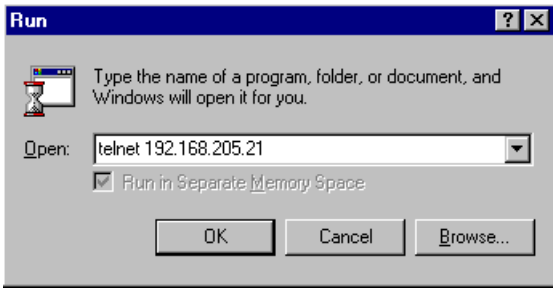
This chapter will introduce the APIs for the following functions:

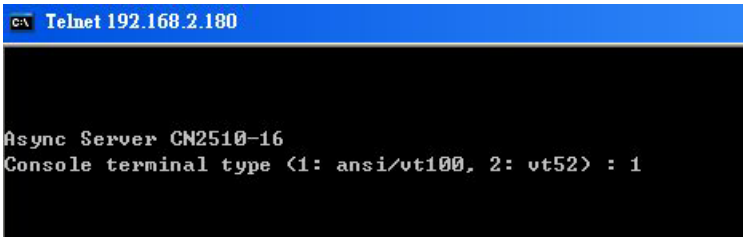
- **Configuring Port Operation Mode – Port Menu [Mode]**
  - **TERM_ASC Mode**
  - **TERM_BIN Mode**
- **Configuring Port Connection Setting – Port Menu [Line]**
- **Save**
- **Restart**

Configuring Port Operation Mode – Port Menu [Mode]

Open Port Menu→Mode to install NT Real COM mode.

1. To enter CN2510 **MAIN MENU**, use either Telnet from a network terminal, or connect directly to CN2510 Async Server with a console terminal. Select **ansi/vt100**, and then press **Enter**. Refer to chapter 2 for more details about how to enter **MAIN MENU**.

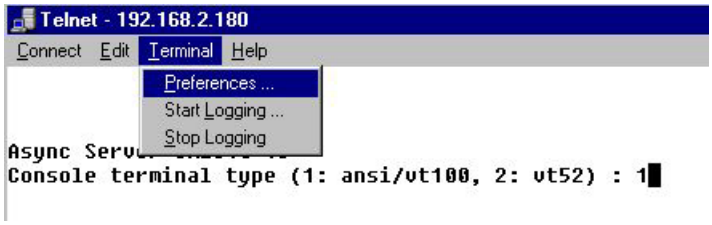


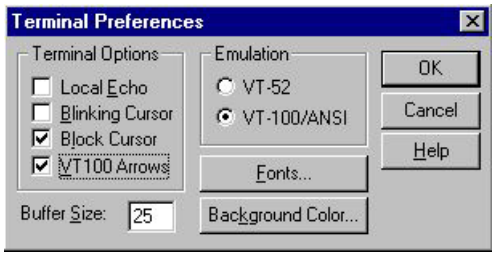


2. The table below is the **MAIN MENU** of CN2510 Async Server. Before you begin, familiarize yourself with the cursor movement functions before starting the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

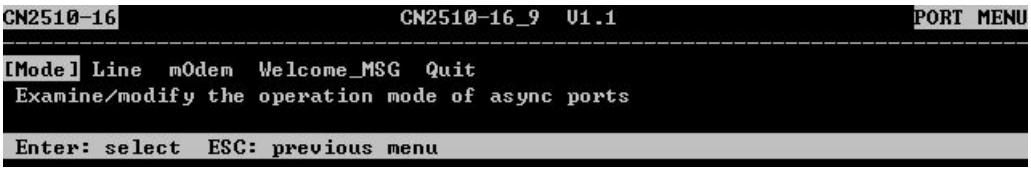
If you have problems using the arrow keys to move the cursor in Windows 9x or NT environment, click on the **Terminal** menu, choose **Preferences**, and then select **VT100 Arrows** in the **Terminal Preferences** window. Click on **OK** to go back to the **MAIN MENU**, and then it can work properly now.



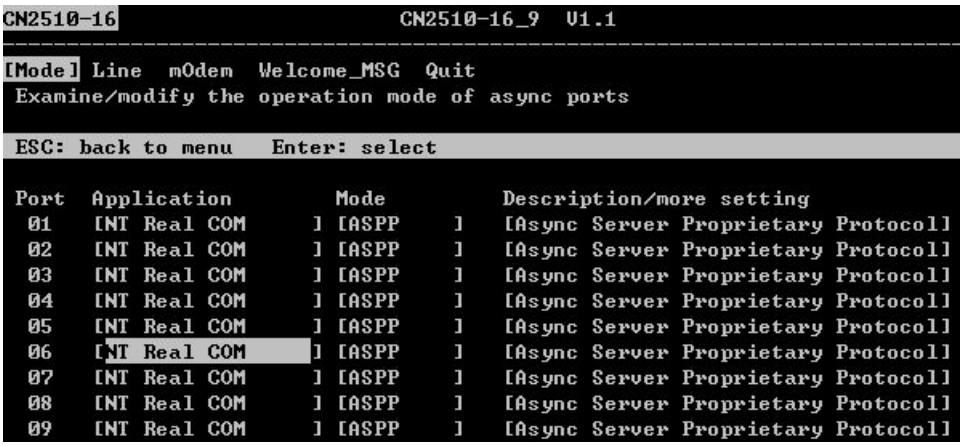


3. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

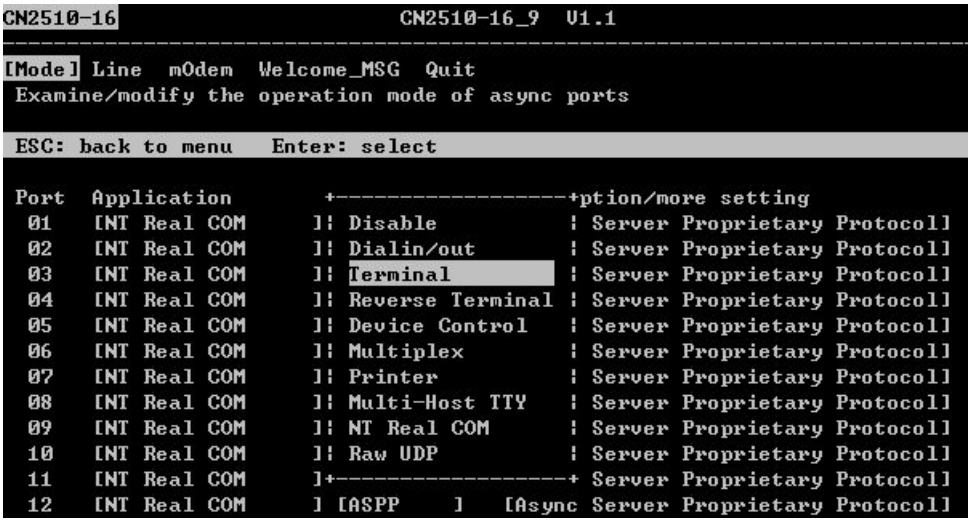
4. In **PORT MENU**, select **Mode**, and then press **Enter**.



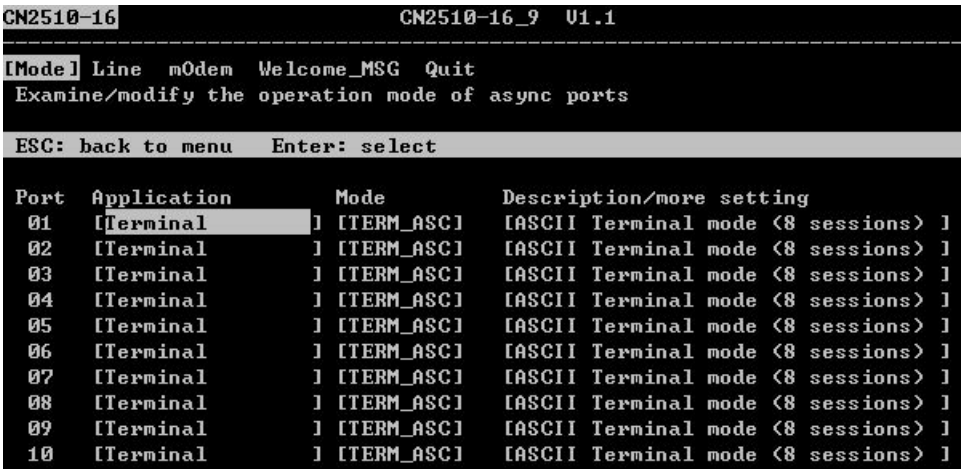
5. In **Mode**, use the arrow keys to move the cursor to the application corresponding to serial ports. Here we use Port 6 as an example.



6. Press **Enter** to open application window. Use up/down arrow keys to select **Terminal**, and then press **Enter** to confirm.



7. Repeat Step 6 to configure port settings. For example, you can follow the steps described below to configure Port 1 to Port 16 for **Terminal mode** application.



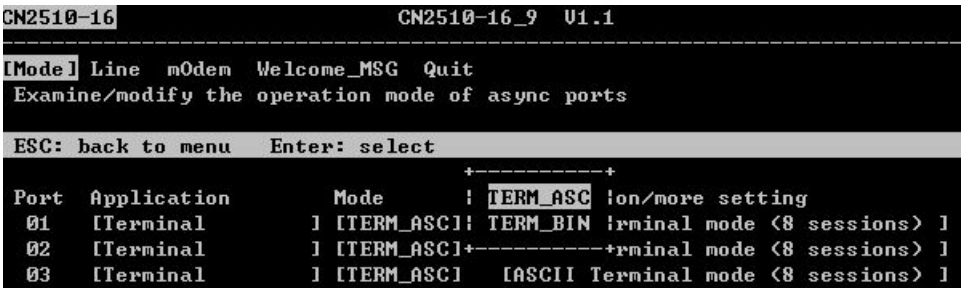
TERM_ASC Mode

After selecting the application mode for each serial port, we will discuss more detailed information on terminal settings. **ASCII** and **Binary** are 2 protocols used in Terminal Access. **ASCII** supports 8 terminal sessions, while **Binary** only supports 1 session.

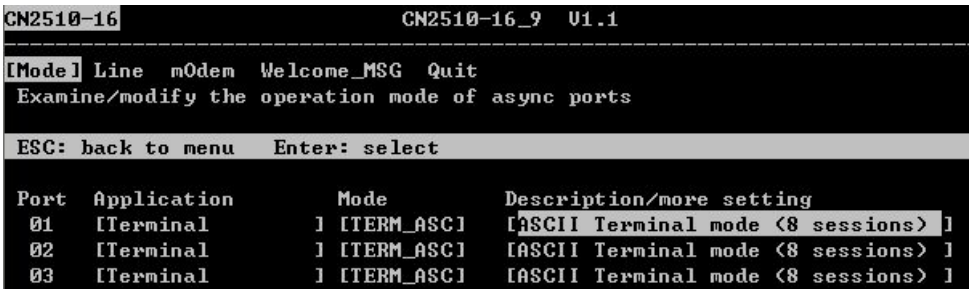
TERM_ASC supports 8 terminal sessions for each terminal. Hot keys are used to switch between different sessions.

1. Move the cursor to the **Mode** column of the corresponding port, and then press **Enter** to see two modes for **Terminal** applications.

2. Select **TERM_ASC**.



3. Move cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.



4. **TERM_ASC Description/More Setting** window.

Setting	Value	Notes	Necessity
Key Mapping			
Max. Sessions	1-8	Configure the max. number of sessions	Optional
Change Session	^T	Hot key for change session	Optional
Quit	^E	Hot key for quit session	Optional
Erase-line		Hot key for erase-line	Optional
Erase-character		Hot key for erase-character	Optional
Break		Hot key for sending telnet break signal	Optional
Interrupt		Hot key for program termination	Optional
Auto-link protocol	None/Telnet/ Rlogin	[None] Do not connect to host automatically. [Telnet] Connects to host automatically with Telnet [Rlogin] Connects to host automatically with Rlogin	Optional
Telnet TCP port	23	Enter a number or leave the space blank. If not specified, a default port 23 is used. If you want to use Telnet without a TCP port number, set this option to 23.	Optional
Primary host IP	IP address or the name defined in the [Host] table	If specified, designates a 'permanent' host to which the terminal will always be connected.	Optional
Link by input IP	Enable/Disable	For users to enter IP address manually for connection	Optional
Secondary host IP	IP address or the name defined in the [Host] table.	If specified, designates a secondary 'permanent' host to which the terminal will be connected.	Optional
Auto-login prompt	Login:	Send ID information when receiving this	Optional

		prompt.	
Password prompt	Password:	Send Password information when receiving this prompt	Optional
Login user name	ID	ID information	Optional
Login password	Password	Password information	Optional
Terminal type	Ansi	Terminal type for outgoing connection	Optional
Inactivity time	0-99 minutes	Idle time setting for auto-disconnection 0 min means no disconnection	Optional
Authentication type	None/local/server	None: No authentication is required. Local: Check ID according to User_table in SERVER MENU. You have to set user's information later in this chapter. Server: Check ID according to external RADIUS Server. Refer to Appendix C for RADIUS setup.	Optional
TCP alive check time	0-99 minutes	Specify the time slice for checking whether TCP connection is alive. If no response, CN2500 will reset the port and disconnect the original connection	Optional

5. Repeat the steps above to set all TERM_ASC ports.

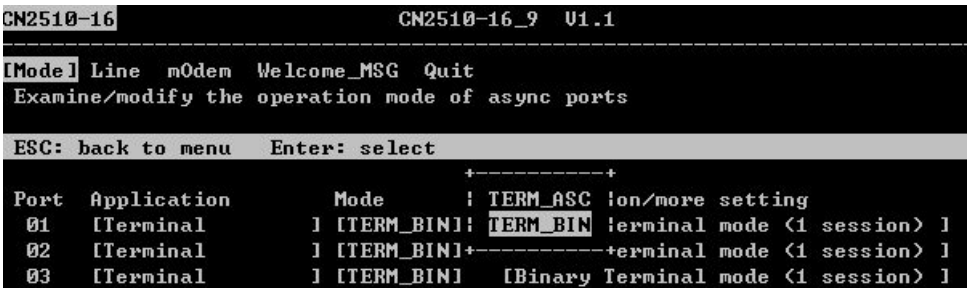
6. Press **Esc** to return to **PORT MENU**.

TERM_BIN Mode

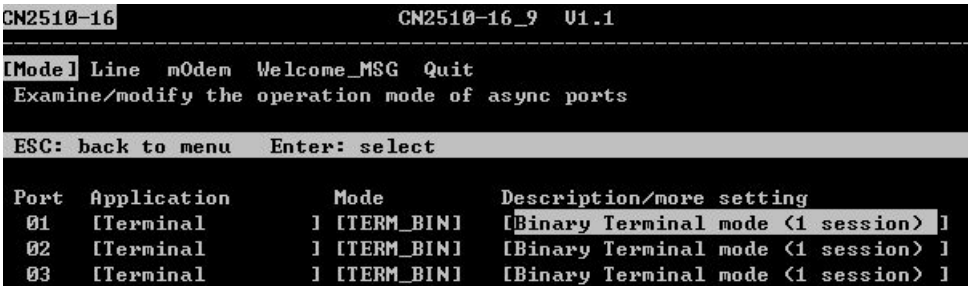
Terminal Binary is used as an application protocol; for example, it can be used for file transfers with XMODEM or ZMODEM. You may only open one terminal session at a time when in Terminal Binary mode.

1. Move the cursor to the **Mode** column of the corresponding port, and then press **Enter** to see two modes for **Terminal** applications.

2. Select **TERM_BIN**.



3. Move cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.



4. **TERM_BIN Description/More Setting** window.

Setting	Value	Notes	Necessity
Quit Key	^E	Defines the Quit key used to disconnect the link between the current terminal session and the remote host. It may be left blank for binary communication.	Optional
Auto-link protocol	None/Telnet/ Rlogin	**[None]** Do not connect to host automatically. **[Telnet]** Connects to host automatically with Telnet **[Rlogin]** Connects to host automatically with Rlogin	Optional
Telnet TCP port	23	Enter a number or leave the space blank. If not specified, a default port 23 is used. If you want to use Telnet without a TCP port number, then set this option to 23.	Optional
Primary host IP	IP address or the name defined in the [Host] table	If specified, it designates a 'permanent' host to which the terminal will always be connected.	Optional
Link by input IP	Enable/Disable	For users to enter IP address manually for connection	Optional
Secondary host IP	IP address or the name defined in the [Host] table.	If specified, it designates a secondary 'permanent' host to which the terminal will be connected.	Optional
Auto-login prompt	ogin:	Send ID information when receiving this prompt. Since some prompts use "Login", others use "login", the prompt detection is	Optional

		defined as "ogin:".	
Password prompt	assword:	Send Password information when receiving this prompt. Since some prompts use "Password", others use "password", the prompt detection is defined as "assword:".	Optional
Login user name	ID	ID information	Optional
Login password	Password	Password information	Optional
Terminal type	Ansi	Terminal type for outgoing connection	Optional
Inactivity time	0-99 minutes	Idle time setting for auto-disconnection 0 min means no disconnection	Optional
Authentication type	None/local/server	**None:** No authentication is required. **Local:** Check ID according to **"User_table"** in "**SERVER MENU"**. You have to set user's information later in this chapter. **Server:** Check ID according to external RADIUS Server. Refer to Appendix C for RADIUS setup.	Optional
TCP alive check time	0-99 minutes	Specify the time slice for checking whether TCP connection is alive. If no response, CN2500 will reset the port and disconnect the original connection	Optional

5. Repeat the steps above to set all **TERM_BIN** ports.

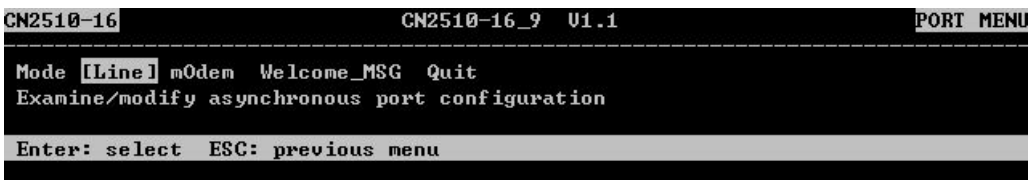
6. Press **Esc** to return to **PORT MENU**.

Configuring Port Setting – Port Menu [Line]

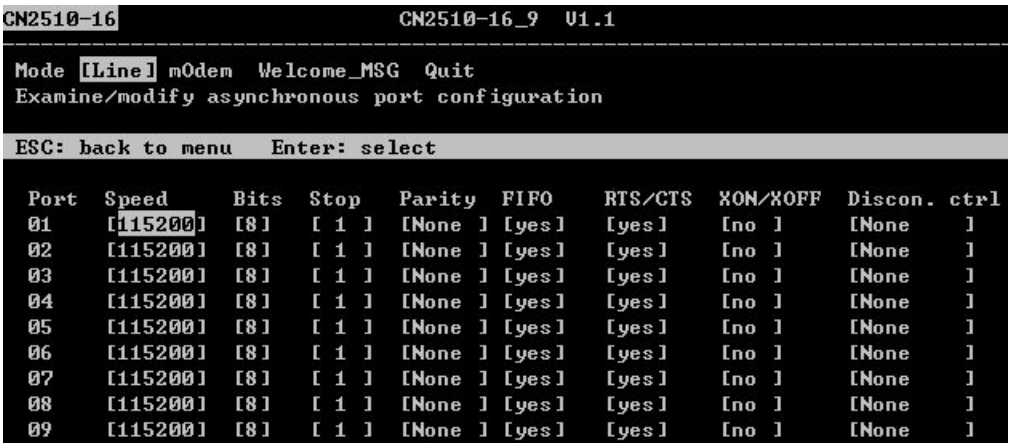
In **PORT MENU [Line]**, you can set line settings for the particular type of device being used.

1. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

2. In **PORT MENU**, select **Mode**, and then press **Enter**.



3. Select the ports and configure the settings.



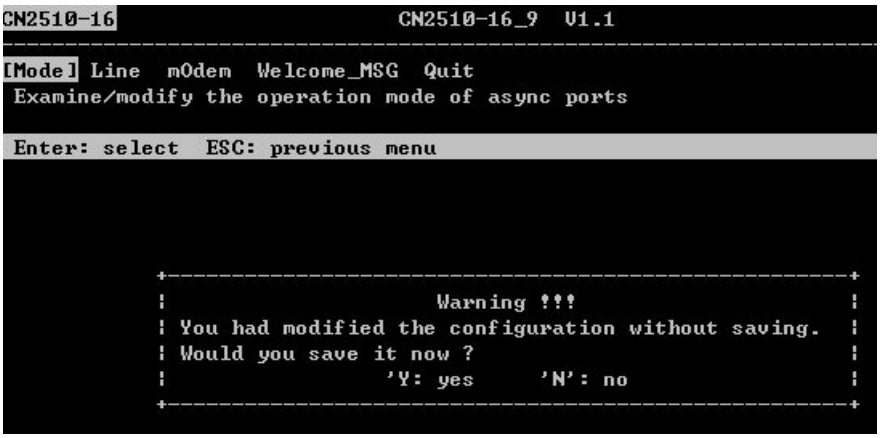
Setting	Value	Notes
Speed	50 bps to 230.4 Kbps	Baud rate
Bits	5/6/7/8	Data bits
Stop	1/2	Stop bits
Parity	None, Even, Odd, Mark, Space	Parity Check
FIFO	Yes/No	FIFO setting
RTS/CTS	Yes/No	Hardware Flow Control
XON/XOFF	Yes/No	Software Flow Control
Discon. ctrl	None/DSR off/DCD off	Recommend setup DSR off when it connect to a Terminal

4. Repeat the step above to configure all functions.

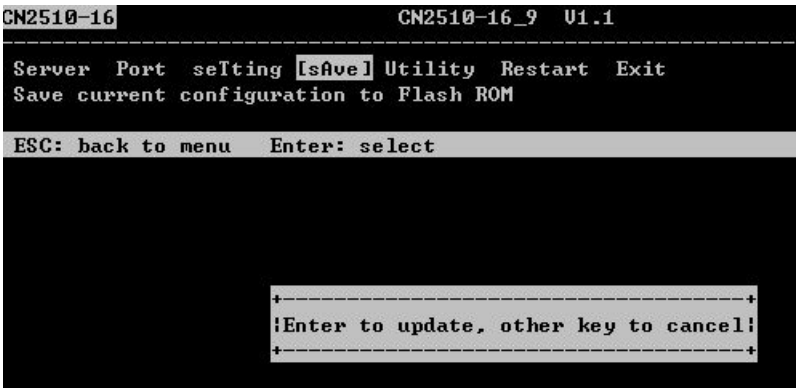
5. Press **ESC** to return the **Port Menu**.

Save

1. Press **Y** to save previous settings when exiting **PORT MENU**.

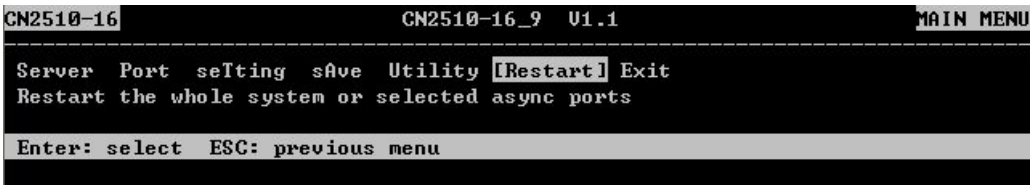


2. You may also save later. In **MAIN MENU**, select **sAve** to save all changed settings, and then press **Enter** to confirm.

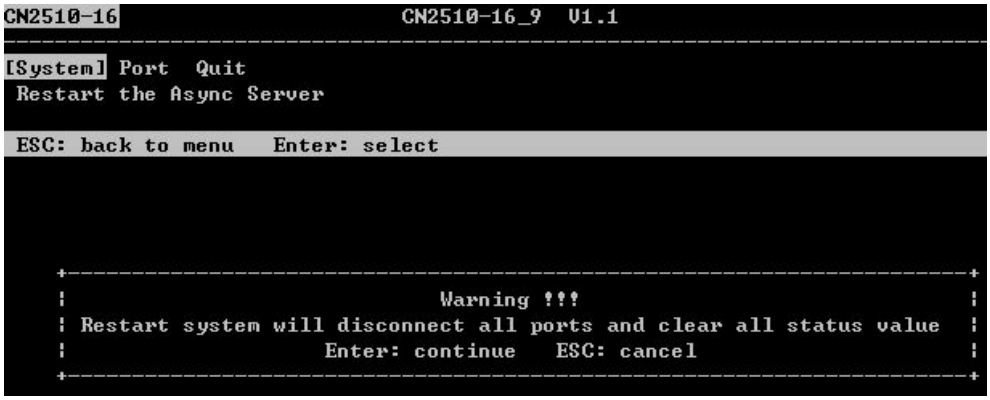


Restart

1. Return to **MAIN MENU** and select **Restart**.



2. Select **System**, and then press **Enter** to continue.



3. The system will restart and the Telnet/Console session will terminate. Enter **MAIN MENU** again to check whether the settings have been changed.

9

Setting up Multi-host TTY

When terminals need to communicate with multiple Unix hosts on the network via several simultaneous sessions, Multi-host TTY is the ideal method for transmission.

When the communication starts, the Unix server on the network has to activate Moxattyd first to TTY port's mapping function. Once it's done, Moxattyd will initiate the connection with the CN2510, and the CN2510 will listen to the connection requests by various Moxattyd at different TCP ports.

Once the connection is established, the Terminal server shown at the bottom right corner can switch session by using hot keys, in order to use one terminal to control different Unix hosts.

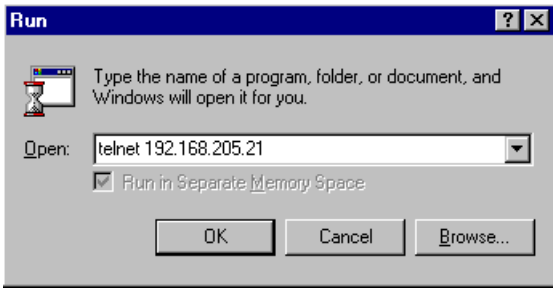
This chapter will introduce the APIs for the following functions:

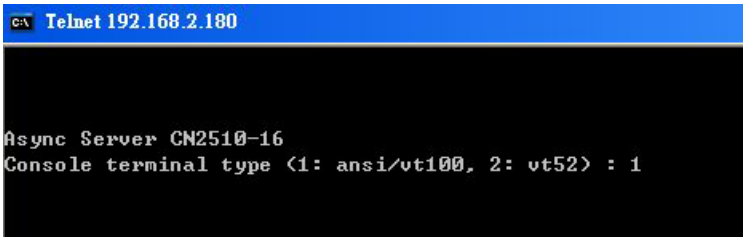
- **Configuring Port Operation Mode – Port Menu [Mode]**
  - Multi-host Mode
- **Configuring Port Connection Setting – Port Menu [Line]**
- **Setting up Hosts**
  - Installing and Compiling Moxatty
  - Moxatty for Different Applications
  - Using Moxatty

Configuring Port Operation Mode – Port Menu [Mode]

Open Port Menu→Mode to install NT Real COM mode.

1. To enter CN2510 **MAIN MENU**, use either Telnet from a network terminal, or connect directly to CN2510 Async Server with a console terminal. Select **ansi/vt100**, and then press **Enter**. Refer to chapter 2 for more details about how to enter **MAIN MENU**.

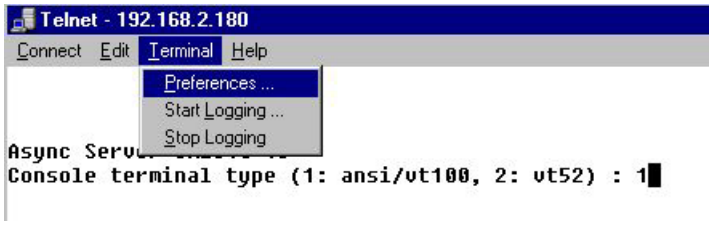


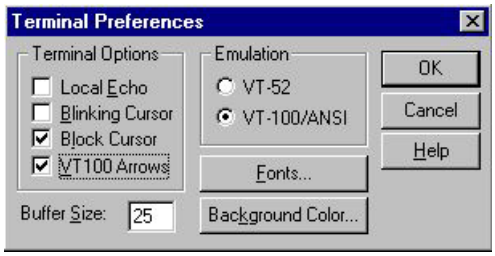


2. The table below is the **MAIN MENU** of CN2510 Async Server. Before you begin, familiarize yourself with the cursor movement functions before starting the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

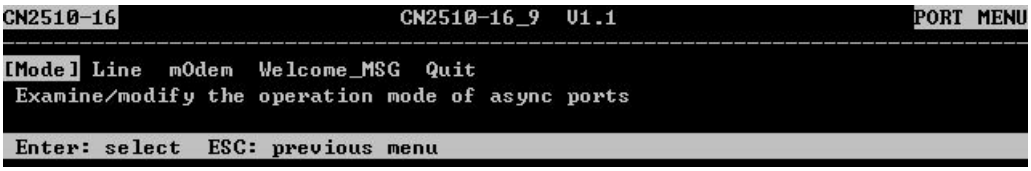
If you have problems using the arrow keys to move the cursor in Windows 9x or NT environment, click on the **Terminal** menu, choose **Preferences**, and then select **VT100 Arrows** in the **Terminal Preferences** window. Click on **OK** to go back to the **MAIN MENU**, and then it can work properly now.



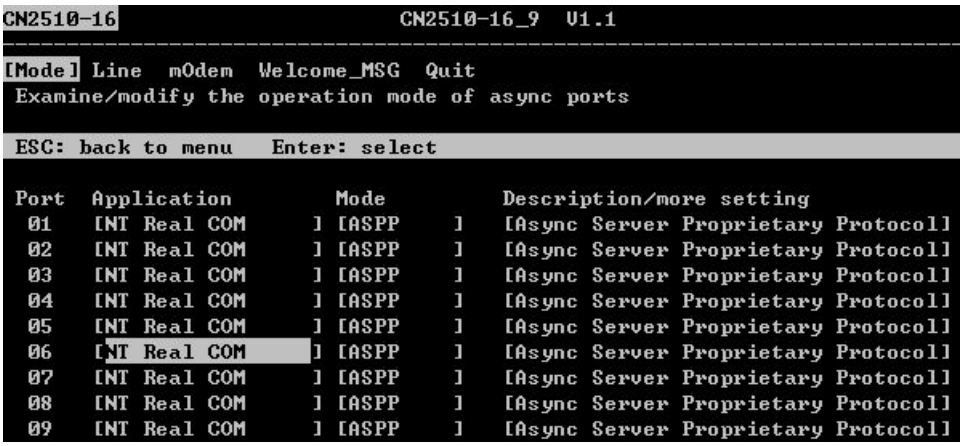


3. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

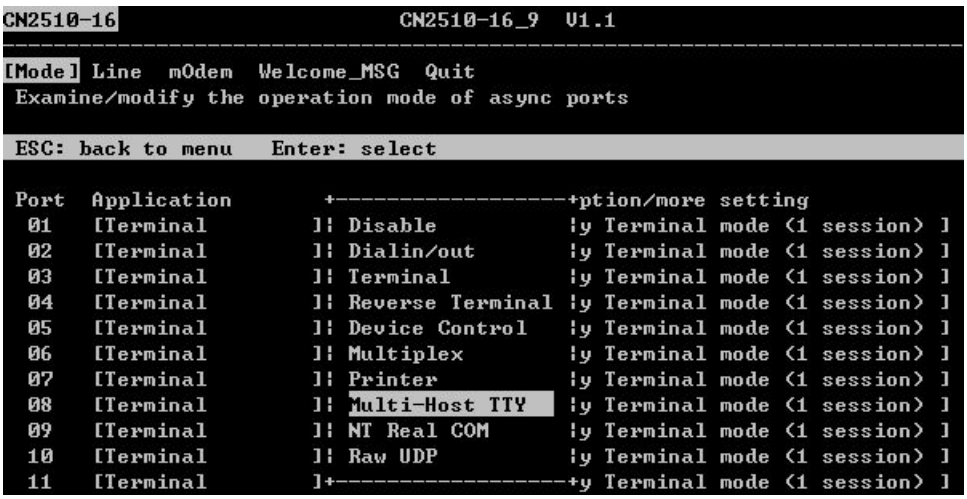
4. In **PORT MENU**, select **Mode**, and then press **Enter**.



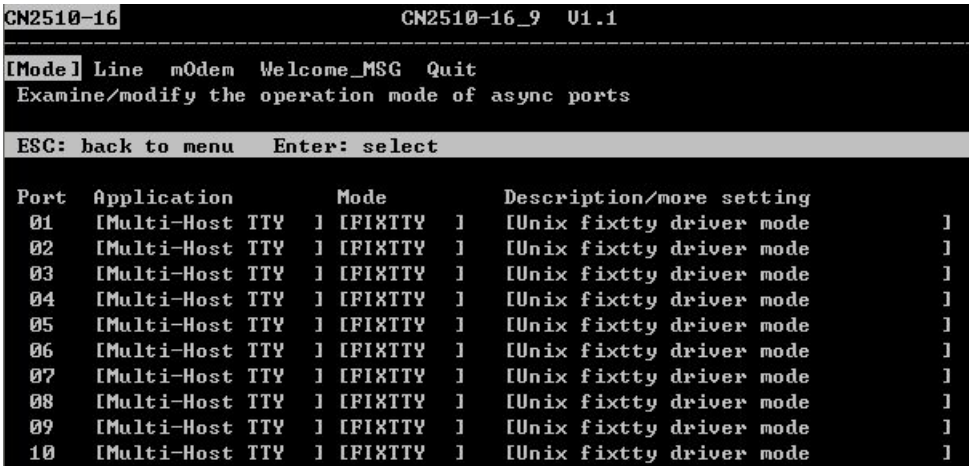
5. In **Mode**, use the arrow keys to move the cursor to the application corresponding to serial ports. Here we use Port 6 as an example.



6. Press **Enter** to open the application window. Use **Up/Down** Arrow keys to select **Multi-Host TTY**, and then press **Enter** to confirm.

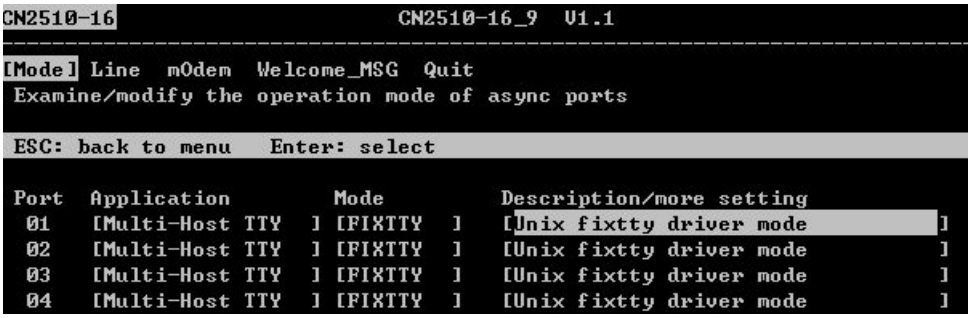


7. Repeat Step 5 to 6 to configure other device control port settings. For example, you can follow the steps described below to configure Port 1 to Port 8 for **Multi-Host TTY** application.

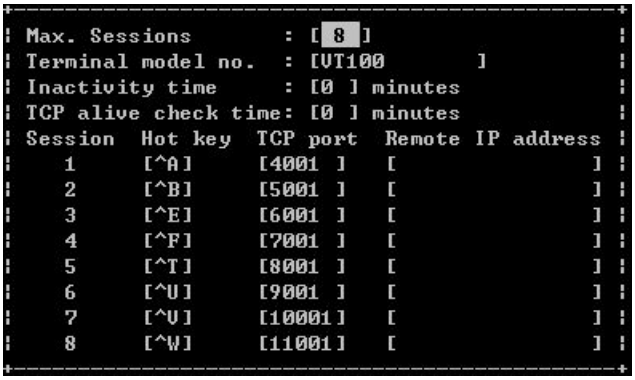


Fix TTY Mode

1. Move cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.



2. **Fix TTY Description/More Setting** window.



Setting	Value	Notes	Necessity
Max. Sessions	1-8	Configure how many connections for each CN2510's port.	Optional
Terminal mode no.	Star NT-560+ NL-5000A VT100	CN2510 provides 3 modes depending on the connection mode supported by the terminal.	Optional
Inactivity time	0-99 minutes	Idle time setting for auto-disconnection. 0 min means no disconnection.	Optional
TCP alive check time	0-99 minutes	Specify the time slice for checking whether the TCP connection is alive. If no response, CN2510 will reset the port and disconnect the original connection.	Optional
Session		Configure the hot key for each connection, the connection's socket port, and the connected IP address.	

3. Repeat the steps above to set all Fix TTY ports.

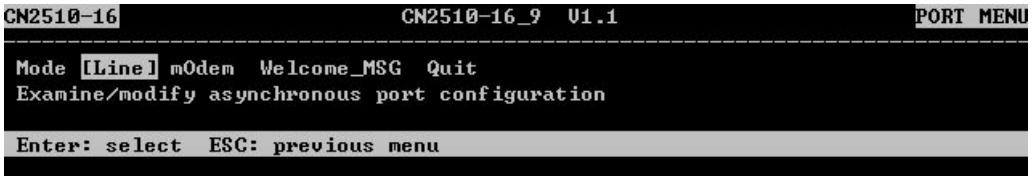
4. Press **Esc** to return to **PORT MENU**.

Configuring Port Setting – Port Menu [Line]

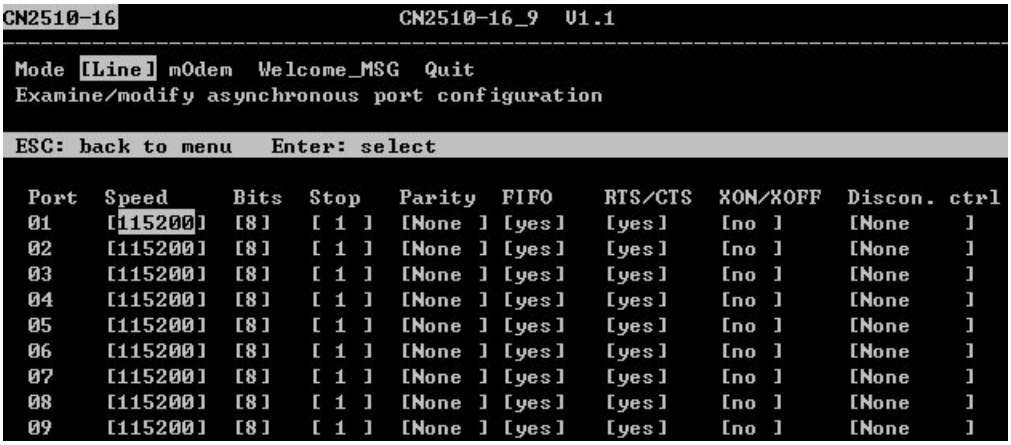
In **PORT MENU [Line]**, you can set line settings for the particular type of device being used.

1. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

2. In **PORT MENU**, select **Mode**, and then press **Enter**.



3. Select the ports and configure the settings.



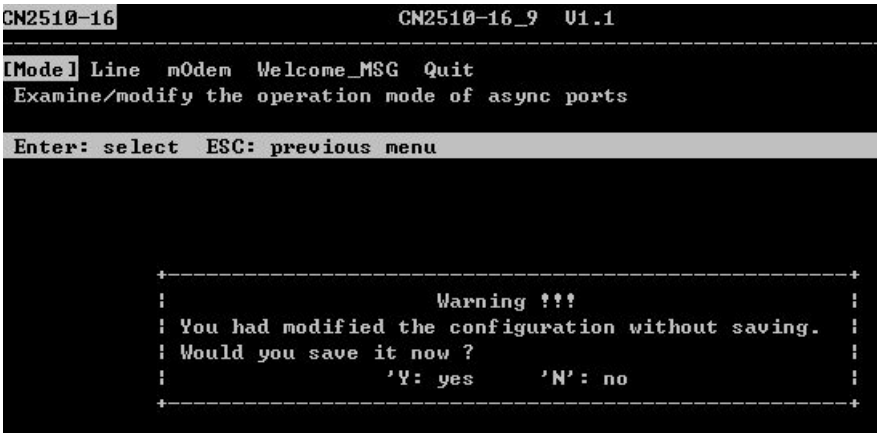
Setting		Notes
Speed	50 bps to 230.4 Kbps	Baud rate
Bits	5/6/7/8	Data bits
Stop	1/2	Stop bits
Parity	None, Even, Odd, Mark, Space	Parity Check
FIFO	Yes/No	FIFO setting
RTS/CTS	Yes/No	Hardware Flow Control
XON/XOFF	Yes/No	Software Flow Control
Discon. ctrl	None/DSR off/DCD off	Disconnection condition when DSR or DCD signal is off

4. Repeat the step above to configure all functions.

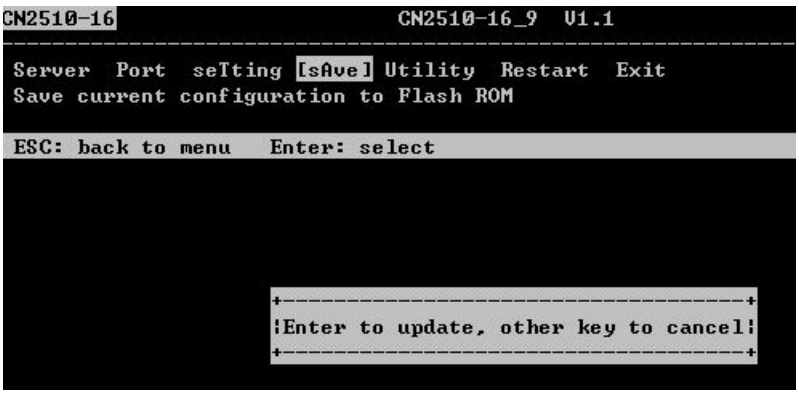
5. Press **ESC** to return the **Port Menu**.

Save

1. Press **Y** to save previous settings when exiting **PORT MENU**.

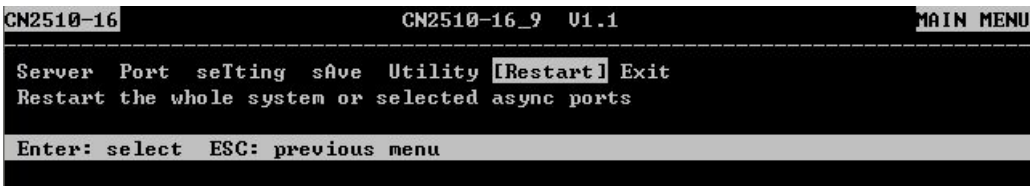


2. You may also save later. In **MAIN MENU**, select **sAve** to save all changed settings, and then press **Enter** to confirm.



Restart

1. Return to **MAIN MENU** and select **Restart**.



2. Select **System**, and then press **Enter** to continue.

3. The system will restart and the Telnet/Console session will terminate. Enter **MAIN MENU** again to check whether the settings have been changed.

Setting up Hosts

Installing and Compiling Moxatty

Installing and Compiling

1. Create a directory for Moxatty (e.g. /user/etc/moxatty) as shown below:

```
#mkdir /usr/etc/moxatty
#cd /usr/etc/moxatty
```

2. Extract code from the tar-formatted file `moxatty.tar` as follows:

```
#tar xvf moxatty.tar
```

3. After the extraction is complete, locate the following files:

`moxattyd.c`	program source code
`moxattyd.cf`	configuration file
`README`	description file for moxatty

4. Compile and link documents:

SCO UNIX	**:** cc -O -o moxattyd moxattyd.c –lsocket
LINUX	**:** cc -O -o moxattyd moxattyd.c
AIX	**:** cc -O -o -DAIX moxattyd moxattyd.c

Configuring tty Redirection

The following example illustrates how to map and redirect a tty device to a MOXA CN2510 serial port. Use **vi** or any editor to add or modify entries in the file `moxattyd.cf`. There are three columns: **Device Name**, **CN2510 IP address** and **TCP port number** in the entry for the file `moxattyd.cf`.

Device Name	CN2510 IP address	TCP Port number
ttyp1	192.168.1.1	4001
ttyp2	192.168.1.1	4002
ttyp3	192.168.1.1	4003
ttyp4	192.168.1.1	4004

NOTE

1. Device Names for SCO Unix are ttyp0, ttyp1, ttyp2.

2. Device Names for Linux are tty[pqrs][0-9,a-f].

3. Device Names for AIX are tty p[0-9,a-f].

4. Default TCP port numbers are from 4001 to 4016 for the 16 port CN2510. If necessary, you can customize the TCP port numbers according to your needs. However, they MUST be the same as those defined on MOXA CN2510.

Adding Moxatty to system booting procedures

To include MOXATTY in the booting system, add the `moxattyd` daemon process to the `/etc/inittab` file. The following example illustrates how to add the full path name for `moxattyd` to the entries of `/etc/inittab` for different UNIX hosts.

For SCO UNIX

```
ts:2:respawn:/usr/etc/moxatty/moxattyd –t 1
```

For LINUX

```
ts:3:respawn:/usr/etc/moxatty/moxattyd –t 1
```

For AIX

```
ts:2:respawn: usr/etc/moxatty/moxattyd –t 1
```

NOTE *The option "–t 1" means the reconnection time is 1 minute after turning CN2510 on or off.*

Moxatty for Different Applications

This section illustrates how to use MOXATTY with a number of different applications.

Terminal Access

To use terminal access the process getty must be activated while the system boots up. To do this, add the following entries to the file /etc/inittab.

For SCO UNIX

```
ts1:234:respawn:/etc/getty ttyp1
ts2:234:respawn:/etc/getty ttyp2
ts3:234:respawn:/etc/getty ttyp3
ts4:234:respawn:/etc/getty ttyp4
```

For LINUX

```
p1:345:respawn:/sbin/mingetty ttyp1
p2:345:respawn: /sbin/mingetty ttyp2
p3:345:respawn: /sbin/mingetty ttyp3
p4:345:respawn: /sbin/mingetty ttyp4
```

For AIX

```
ts1:2:respawn:/usr/sbin/getty ttyp1
ts2:2:respawn:/usr/sbin/getty ttyp2
ts3:2:respawn:/usr/sbin/getty ttyp3
ts4:2:respawn:/usr/sbin/getty ttyp4
```

NOTE ttyp1~ttyp4 device names are mapped to port 1~ port 4 on MOXA CN2510.

Transparent Printer Access

It's not necessary to add additional entries to /etc/inittab for printer access, as mentioned in terminal access. Since MOXATTY is a fixed pseudo tty, you can easily connect a serial printer to a Moxa CN2510 serial port to execute printing commands.

The following example is for SCO UNIX:

Command	Description
/usr/lib/lpadmin –pLaser1 -v/dev/ttyp1	set printer name as Laser1 and use ttyp1
/usr/lib/accept Laser1	accept printer Laser1
enable Laser1	enable printer Laser1
lp -dLaser1 file_name	print file to Laser1

Other Applications

As mentioned earlier, system setup depends on which application you are using. Since MOXATTY is a fixed pseudo tty, no additional setup is required to enable your applications to open tty devices.

Using Moxatty

Starting MOXATTY

Once you have completed the above settings, you can start. Follow the steps given below to ensure that MOXATTY is running correctly.

See if the entries added to moxattyd.cf are correct.

Run init q or reboot your system to start the MOXATTY daemon. If you see that moxattyd is running on your system, then MOXATTY has been successfully started.

Stopping MOXATTY

If for any reason you need to stop the MOXATTY daemon, the two methods listed below allow you to stop the moxattyd daemon process:

1. Remove entries related to `moxattyd` daemon in `/etc/inittab` and execute `init q` or reboot your system, or
2. Replace `respawn` with `off` in entries related to `moxattyd` daemon in `/etc/inittab`, and execute `init q` or reboot your system.

For instance, 'ts:2:off:/usr/etc/moxatty/moxattyd' for SCO UNIX, 'ts:3:off:/usr/etc/moxatty/moxattyd' for LINUX, or 'ts:2:off:/usr/etc/moxatty/moxattyd' for AIX.

10

Setting up Dial-in/out of Band Management

We describe here the steps required to configure Moxa CN2510 as a Dial-in/out Access Server. Dial-in Access allows remote users to access the LAN, whereas Dial-out Access allows LAN hosts to establish connections to other sites.

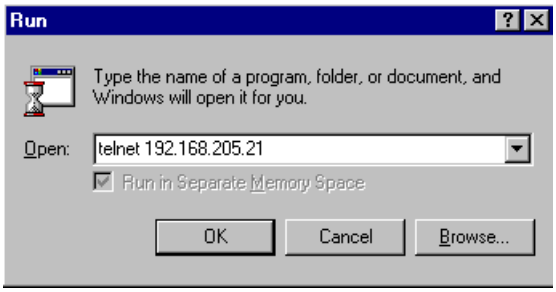
The following topics are covered in this chapter:

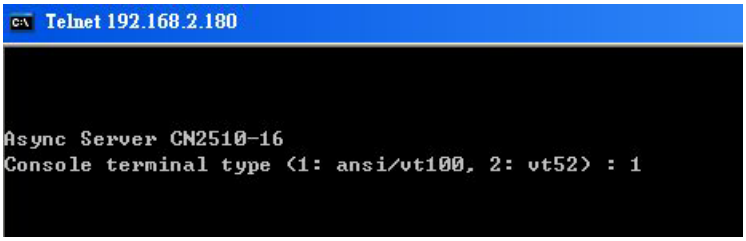
- **Configuring Port Operation Mode – Port Menu [Mode]**
  - PPPD/PPP Mode
  - SLIPD/SLIP Mode
  - Dynamic Mode
- **Configuring Port Connection Setting – Port Menu [Line]**
- **Configuring Modem Initialization – Port Menu [Modem]**
- **Optional Welcome Message – Port Menu [Welcome_MSG]**
- **Optional local user information – SERVER MENU [User_table]**
- **Save**
- **Restart**

Configuring Port Operation Mode – Port Menu [Mode]

Open Port Menu→Mode to install NT Real COM mode.

1. To enter CN2510 **MAIN MENU**, use either Telnet from a network terminal, or connect directly to CN2510 Async Server with a console terminal. Select **ansi/vt100**, and then press **Enter**. Refer to chapter 2 for more details about how to enter **MAIN MENU**.

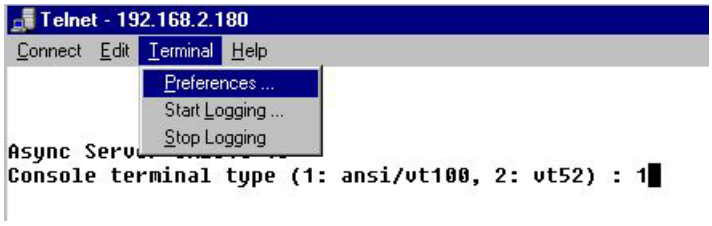


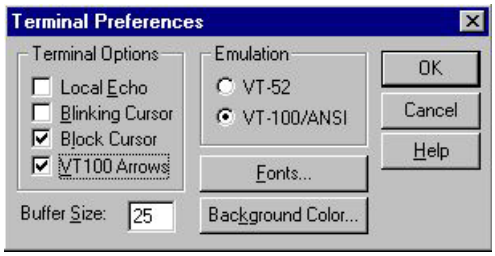


2. The table below is the **MAIN MENU** of CN2510 Async Server. Before you begin, familiarize yourself with the cursor movement functions before starting the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

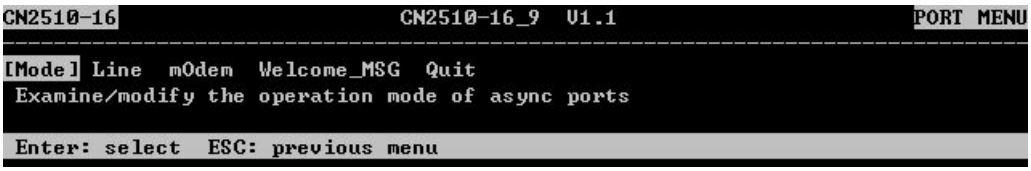
If you have problems using the arrow keys to move the cursor in Windows 9x or NT environment, click on the **Terminal** menu, choose **Preferences**, and then select **VT100 Arrows** in the **Terminal Preferences** window. Click on **OK** to go back to the **MAIN MENU**, and then it can work properly now.



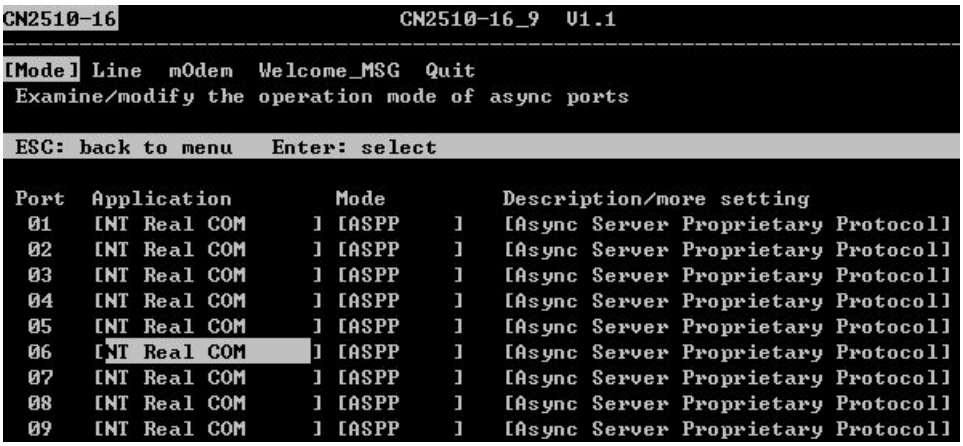


3. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

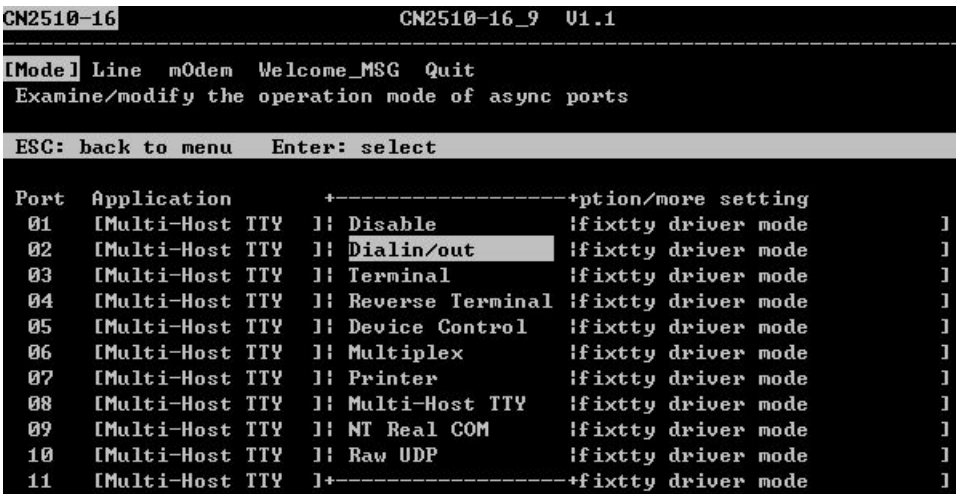
4. In **PORT MENU**, select **Mode**, and then press **Enter**.



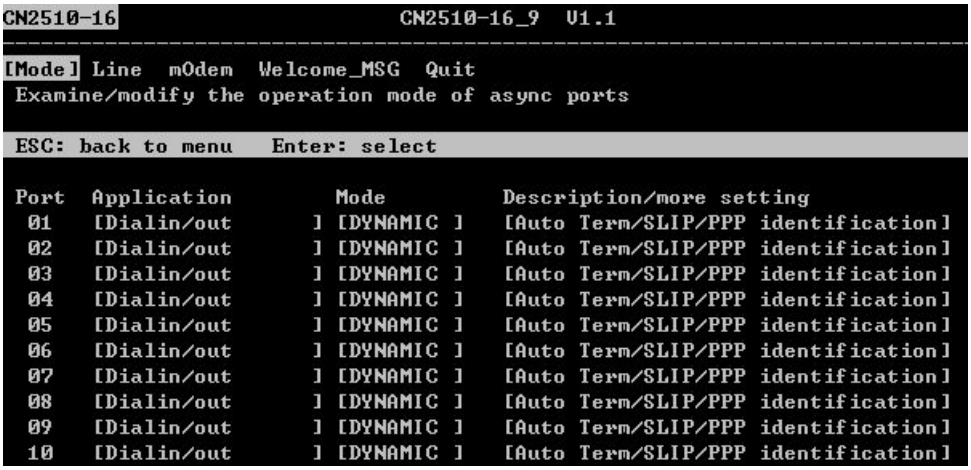
5. In **Mode**, use the arrow keys to move the cursor to the application corresponding to serial ports. Here we use Port 6 as an example.



6. Press **Enter** to open the application window. Use **Up/Down** Arrow keys to select **Dialin/out mode**. Press **Enter** to confirm.



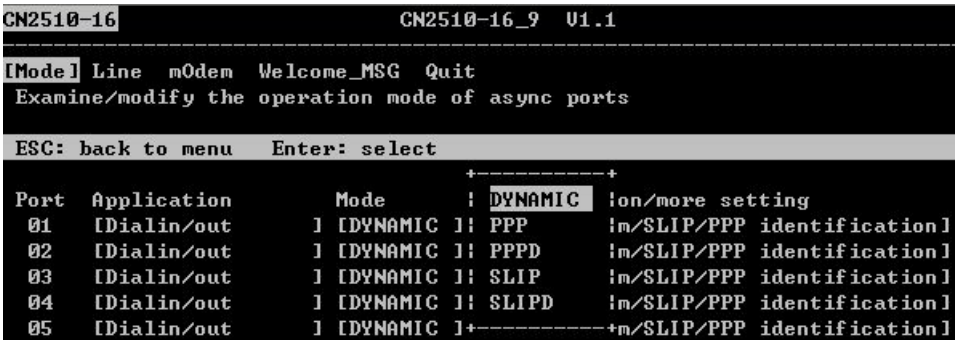
7. Repeat Step 5 to 6 to configure other device control port settings. For example, you can follow the steps described below to configure Port 1 to Port 8 for **Dialin/out** application.



PPPD/PPP Mode

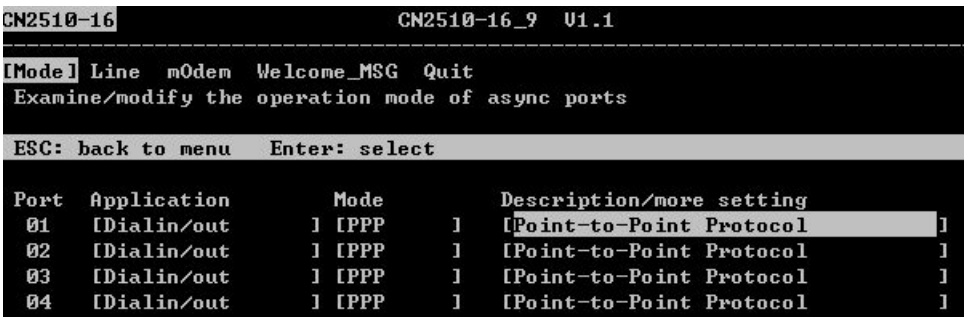
PPPD (PPP on demand) is used for dial-in services since it provides PPP services only when receiving a request from a remote PC. PPP provides standard PPP services for both dial-in and dial-out.

1. Move the cursor to the **Mode** column of the corresponding port, and then press **Enter** to see five mode options for dial-in/out applications.



2. Select **PPPD** for dial-in services only, or **PPP** for both dial-in/out services.

3. Move the cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.



Setting	Value	Notes	Necessity
Destination IP addr	IP address for the remote Dial-in / Dial-out user	DO assign an IP address for the remote user.	Yes
Source IP address	IP address for the port	CN2510 automatically assigns an IP address for the port. Recommend: Blank	Optional
IP netmask	IP netmask	CN2510 automatically assigns "255.255.255.255" IP netmask for the port. Recommend: Blank	Optional
TCP/IP compression	Yes/No	Depends on remote user's application request for compression.	Optional
Inactivity time	0-99 minutes	Idle time setting for disconnection 0 min means no disconnection	Optional
Link quality report	Yes/No	If you have software to collect the Link quality information, choose YES.	Optional
Outgoing PAP ID	ID	Dial out user/account ID information	Optional
PAP password	Password	Dial out user/account password	Optional
Incoming PAP check	None/local/server	**None**: No authentication is required **Local**: Check ID according to **User_table** in **SERVER MENU**. You will need to set user's information later in this chapter. **Server**: Check ID according to external RADIUS Server. Refer to Appendix C for RADIUS setup.	Optional

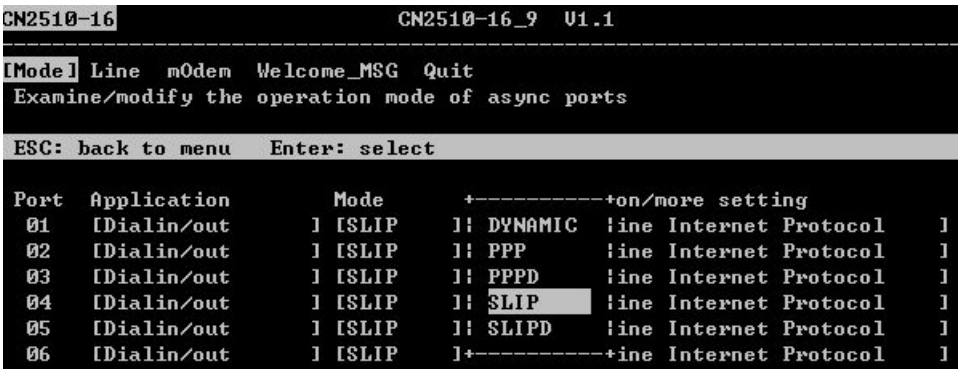
4. Repeat the above steps to set all **PPP/PPPD** ports.

5. Press **Esc** to go back to **PORT MENU**.

SLIPD/SLIP Mode

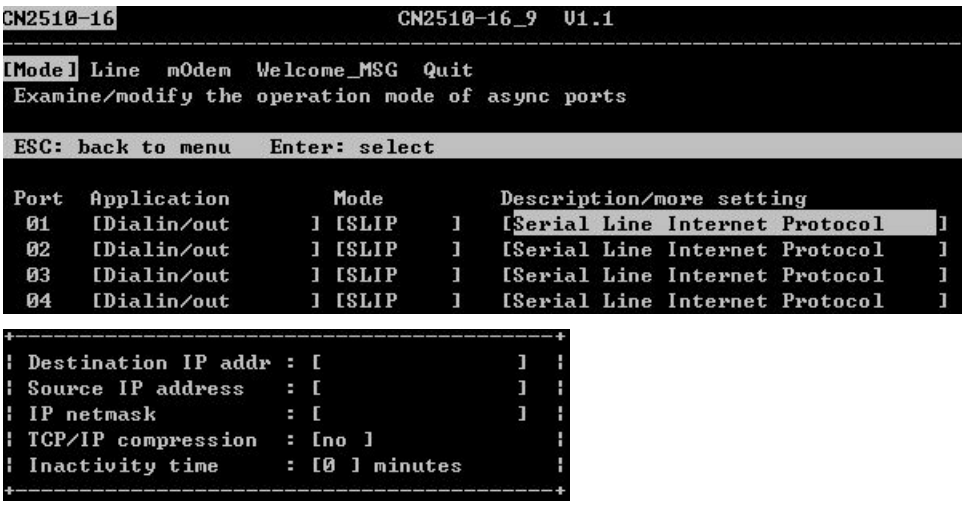
Moxa CN2510 supports SLIP (Serial Line Internet Protocol), and SLIPD (for Dial-in services only).

1. Move the cursor to the **Mode** column of the corresponding port, and then press **Enter** to see five mode options for dial-in/out applications.



2. Select **SLIPD** for dial-in services only, or **SLIP** for both dial-in/out services.

3. Move the cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.



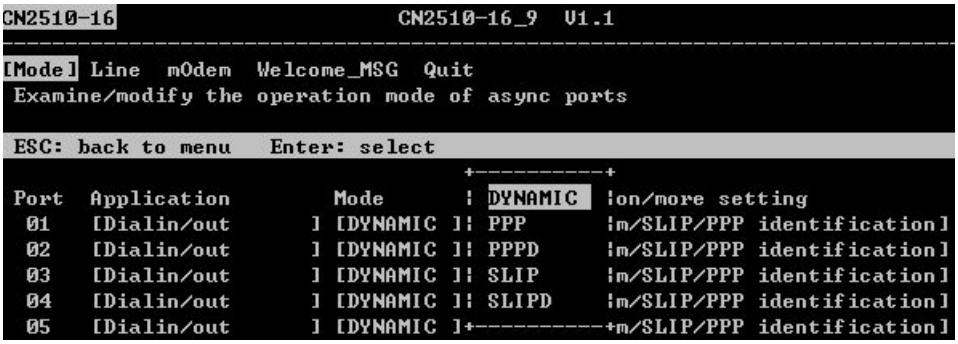
Setting	Value	Notes	Necessity
Destination IP addr	IP address for the remote Dial-in / Dial-out user	DO assign an IP address for the remote user.	Yes
Source IP address	IP address for the port	CN2510 automatically assigns an IP address for the port. Recommend: Blank	Optional
IP netmask	IP netmask	CN2510 automatically assigns "255.255.255.255" IP netmask for the port. Recommend: Blank	Optional
TCP/IP compression	Yes/No	Depends on remote user's application request for compression.	Optional
Inactivity time	0-99 minutes	Idle time setting for disconnection 0 min means no disconnection	Optional

4. Repeat the above steps to set all **SLIPD/SLIP** ports.
5. Press **Esc** to go back to **PORT MENU**.

Dynamic Mode

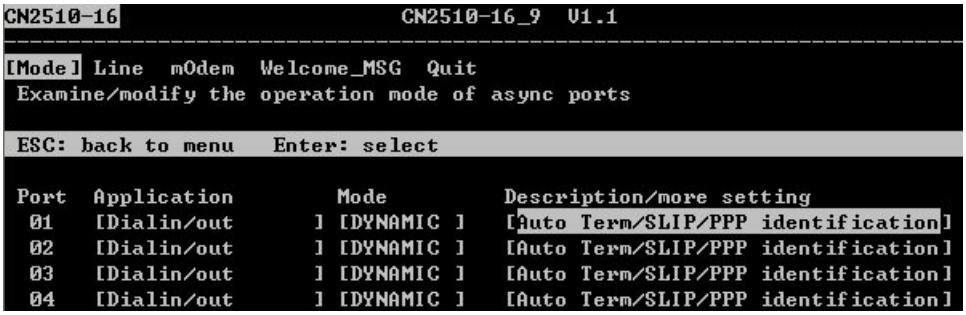
Dynamic mode integrates PPPD/SLIPD/Terminal dial-in services. Dynamic mode automatically detects which remote connection mode is being used, and provides corresponding services. You can further enable/disable PPP/SLIP/Terminal services by using **Description/more setting**.

1. Move the cursor to the **Mode** column of the corresponding port, and then press **Enter** to see five mode options for dial-in/out applications.

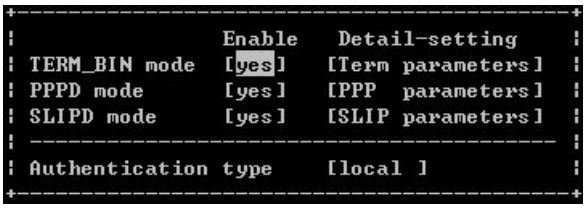


2. Select **Dynamic** for dial-in/out services.

3. Move the cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.



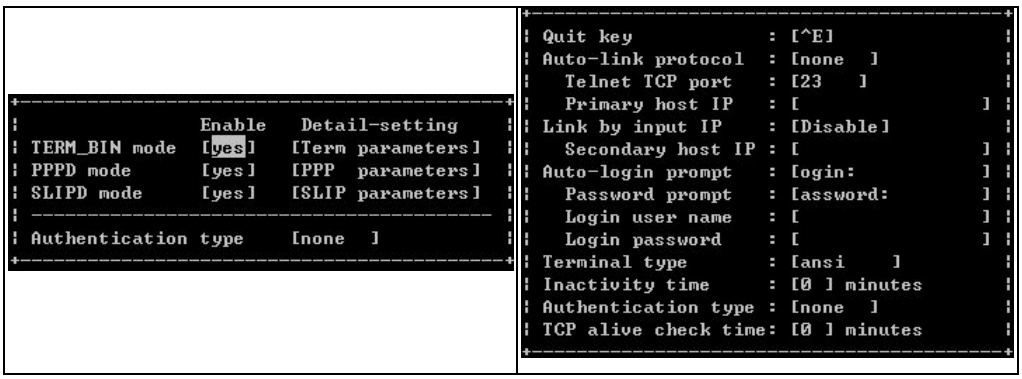
4. Dynamic **Description/more Setting** window. Select **yes** to enable **TERM_BIN**, **PPPD**, and **SLIPD** modes.



Setting	Value	Notes	Necessity
TERM_BIN mode	YES/NO	To enable Binary Terminal connection	Optional
PPPD mode	YES/NO	To enable PPPD connection	Optional
SLIPD mode	YES/NO	To enable SLIPD Terminal connection	Optional
Authentication type	None/local/ server	**None**: No authentication is required **Local**: Check ID according to **User_table** in	Optional

		SERVER MENU. You will need to set user's information later in this chapter. **Server**: Check ID according to external RADIUS Server	

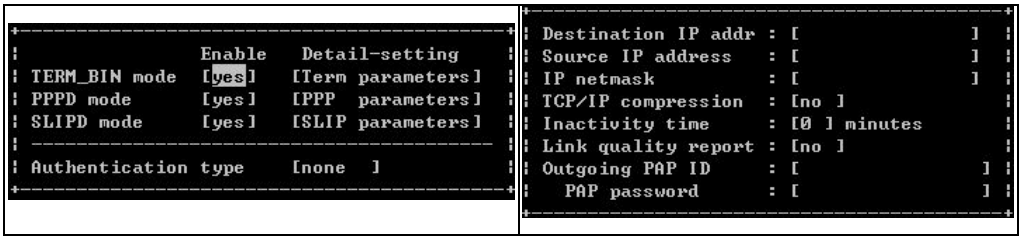
5. **Term parameters.** Open the **Detail-setting** window to set more parameters (if necessary).



Setting	Value	Notes	Necessity
Quit key	^E	Defines the Quit key used to disconnect the link between the current terminal session and the remote host.	Optional
Auto-link protocol	None/Telnet/ Rlogin	**[None]** Do not connect to host automatically. **[Telnet]** Connects to host automatically with Telnet **[Rlogin]** Connects to host automatically with Rlogin	Optional
Telnet TCP port	23	Enter a number or leave the space blank. If not specified, a default port 23 is used. For example, if you want to use Telnet without a TCP port number, use 23.	Optional
Primary host IP	IP address or the name defined in the [Host] table	If specified, it designates a 'permanent' host to which the terminal will always be connected.	Optional
Link by input IP	Enable/Disable	For users to enter IP address manually for connection	Optional
Secondary host IP	IP address or the name defined in the [Host] table.	If specified, it designates a secondary 'permanent' host to which the terminal will be connected.	Optional
Auto-login prompt	ogin:	Send ID information when receiving this prompt. Since some prompts use "Login" and others use "login", the prompt detection is defined as "ogin:".	Optional
Password prompt	assword:	Send Password information when receiving this prompt. Since some prompts use "Password" and others use "password", the prompt detection is defined as "assword:".	Optional
Login user name	ID	ID information	Optional
Login password	Password	Password information	Optional

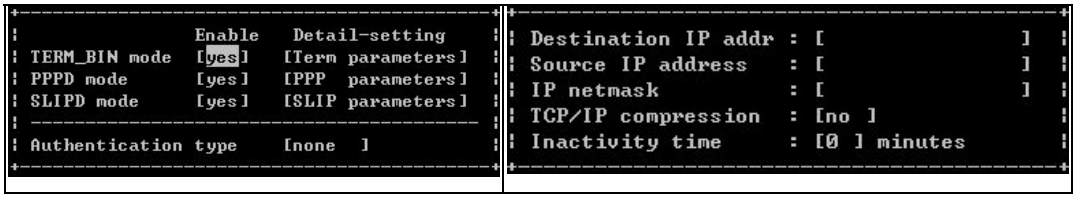
Terminal type	ansi	Terminal type for outgoing connection	Optional
Inactivity time	0-99 minutes	Idle time setting for disconnection 0 min means no disconnection	Optional
TCP alive check time	0-99 minutes	Specify the time slice for checking whether the TCP connection is alive. If no response, CN2510 will reset the port and disconnect the original connection	Optional

6. **PPP parameters.** Open the **Detail-setting** window to set more parameters (if necessary). Destination IP is required.



Setting	Value	Notes	Necessity
Destination IP addr	IP address for the remote Dial-in user	DO assign an IP address for the remote user.	Yes
Source IP address	IP address for the port	CN2510 automatically assigns IP address for the port. Recommend: Blank	Optional
IP netmask	IP netmask	CN2510 automatically assigns "255.255.255.255" IP netmask for the port. Recommend: Blank	Optional
TCP/IP compression	Yes/No	Depends on remote user's application request for compression.	Optional
Inactivity time	0-99 minutes	Idle time setting for disconnection. 0 min means no disconnection	Optional
Link quality report	Yes/N0	If you have software to collect the link quality information, choose YES.	Optional
Outgoing PAP ID	ID	Dial out user/account ID information	Optional
PAP password	Password	Dial out user/account password	Optional

7. **SLIP parameters.** Open the **Detail-setting** window to set parameters (if necessary). Destination IP is required.



Setting	Value	Notes	Necessity
Destination IP addr	IP address for the remote Dial-in user	DO assign an IP address for the remote user.	Yes
Source IP address	IP address for the port	CN2510 automatically assigns IP address for the port. Recommend: Blank	Optional
IP netmask	IP netmask	CN2510 automatically assigns "255.255.255.255" IP netmask for the port. Recommend: Blank	Optional
TCP/IP compression	Yes/No	Depends on remote user's application request for compression.	Optional
Inactivity time	0-99 minutes	Idle time setting for disconnection. 0 min means no disconnection	Optional

8. Repeat the above steps to set all **Dynamic** ports.

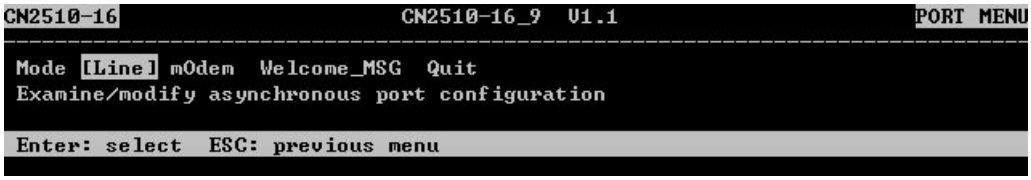
9. Press **Esc** to go back to **PORT MENU**.

Configuring Port Setting – Port Menu [Line]

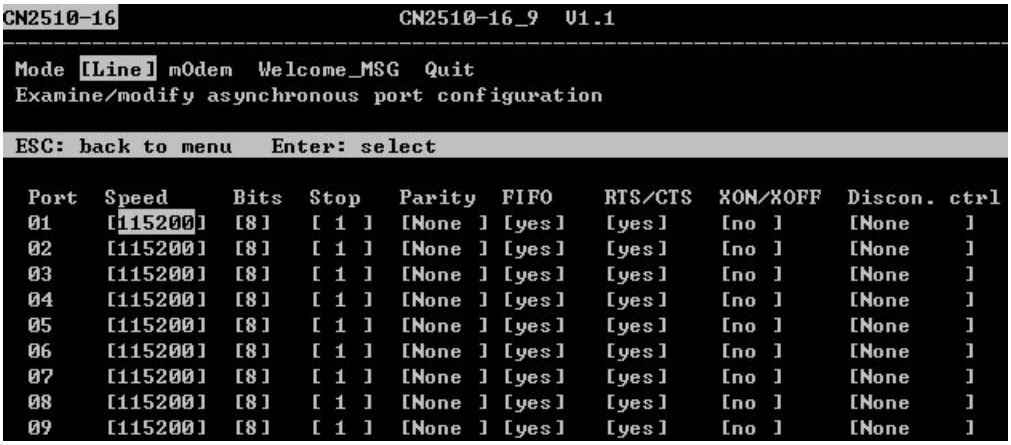
In **PORT MENU [Line]**, you can set line settings for the particular type of device being used.

1. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

2. In **PORT MENU**, select **Mode**, and then press **Enter**.



3. Select the ports and configure the settings.



Setting	Value	Notes
Speed	50 bps to 230.4 Kbps	Baud rate
Bits	5/6/7/8	Data bits
Stop	1/2	Stop bits
Parity	None, Even, Odd, Mark, Space	Parity Check
FIFO	Yes/No	FIFO setting
RTS/CTS	Yes/No	Hardware Flow Control
XON/XOFF	Yes/No	Software Flow Control
Discon. ctrl	None/DSR off/DCD off	Recommend setup DCD off when it connect to a modem

4. Repeat the step above to configure all functions.

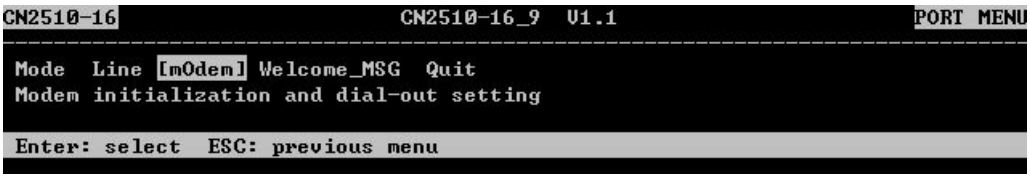
5. Press **ESC** to return the **Port Menu**.

Configuring Modem Initialization – Port Menu [Modem]

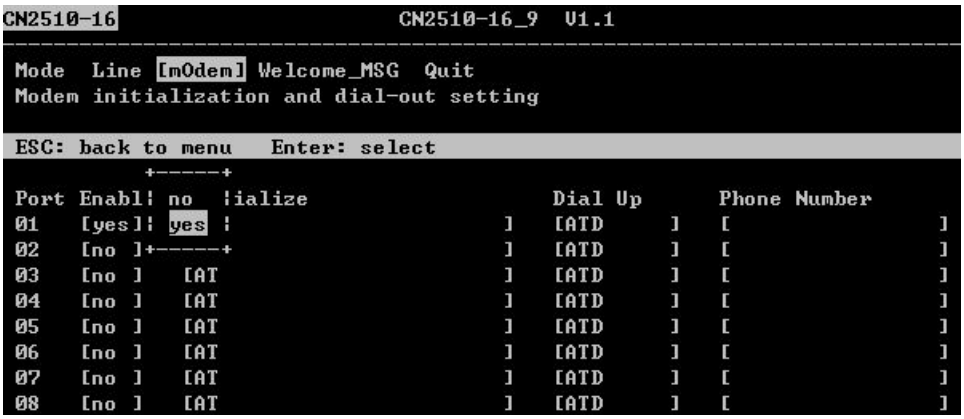
In **PORT MENU [Modem]**, set modem dial-out initialization and dial-out phone number.

1. In **MAIN MENU**, use the arrow keys to select **Port** for port setting, and then press **Enter**.

2. In **PORT MENU**, select **mOdem** for application setting and press **Enter**.



3. Specify modem settings.



Setting	Value	Notes
Enable	YES/NO	Enable modem settings
Initialize	String	Set modem initial string, for example, AT&S0 =1 is for auto-answer.
Dial Up	String	Dial-up AT command
Phone Number	Number	Set the number you use to dial out

NOTE The **Dial Up** and **Phone Number** settings are only valid under PPP/SLIP mode.

4. Repeat the above steps to set all modem initializations.

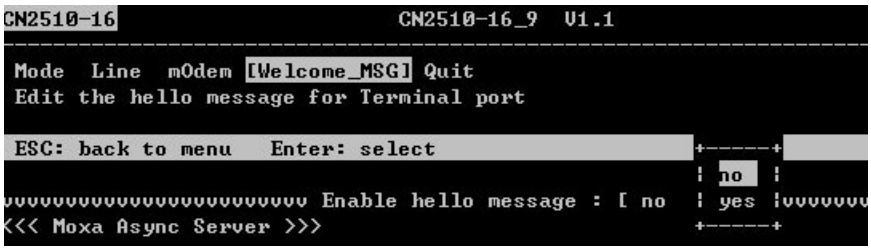
5. Press **Esc** to go back to **PORT MENU**.

Optional Welcome Message – Port Menu [Welcome_MSG]

In **PORT MENU [Welcome_MSG]**, set welcome message to greet dial in users.

1. In **MAIN MENU**, move arrow key to select **Port** for port setting and press **Enter**.

2. In **PORT MENU**, select **Welcome_MSG** for application setting and press **Enter**.



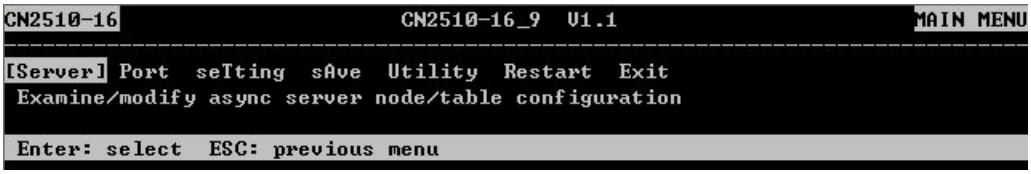
3. Select **YES** to edit welcome message.

4. Press **Esc** to go back to **PORT MENU**.

Optional local user information – Server Menu [User_table]

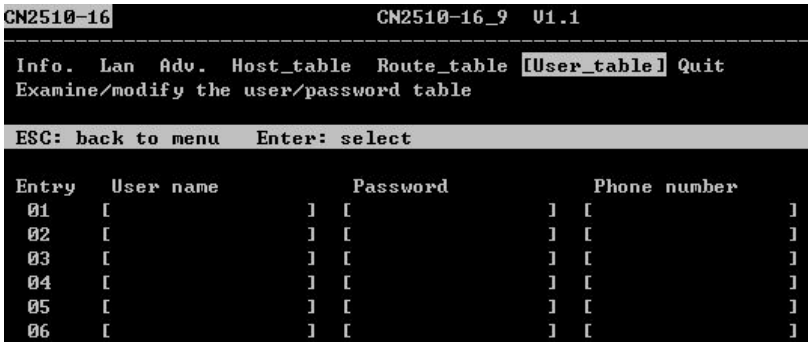
In **Server Menu [User_Table]**, set local user authentication information. If you set **Incoming PAP check** or **Authentication type** as **Local** instead of **Server**, you have to set **[User_table]** for user authentication. You can also activate the call-back function under the User-Table.

1. In **MAIN MENU**, select **Server.**



2. In **SERVER MENU**, select **User_table**.

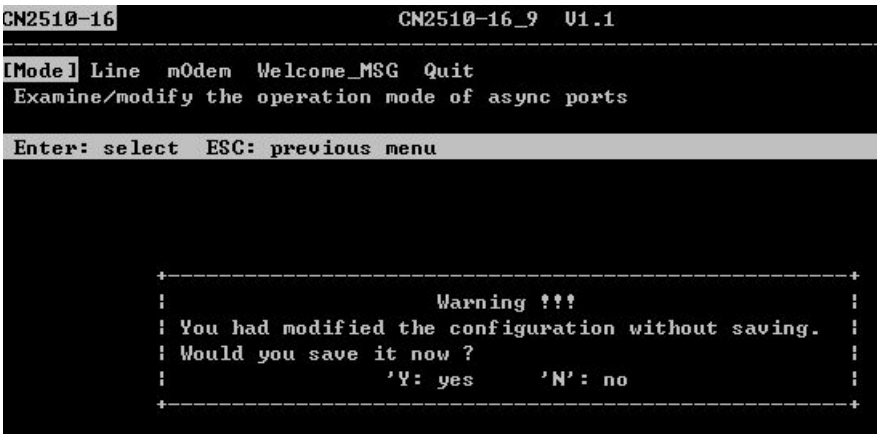
3. Use the arrow keys to position the cursor and then input user name and password. If you want to active the automatic call back function, input the user phone number. CN2510 is able to store information for up to 64 users.



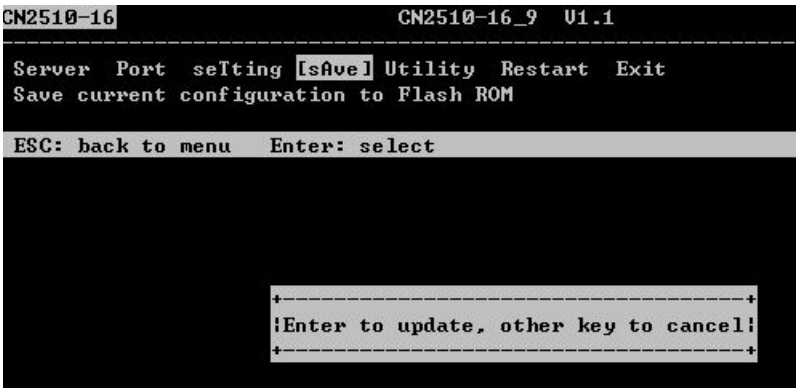
4. Press **Esc** to return to **MAIN MENU**.

Save

1. Press **Y** to save previous settings when exiting **PORT MENU**.

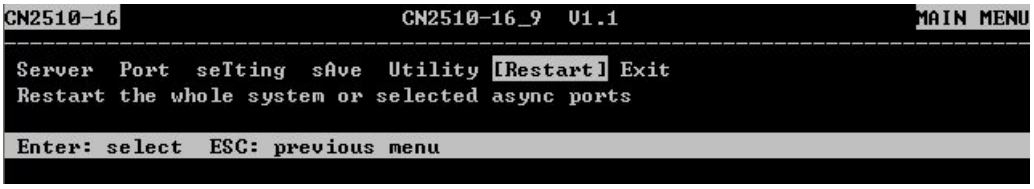


2. You may also save later. In **MAIN MENU**, select **sAve** to save all changed settings, and then press **Enter** to confirm.

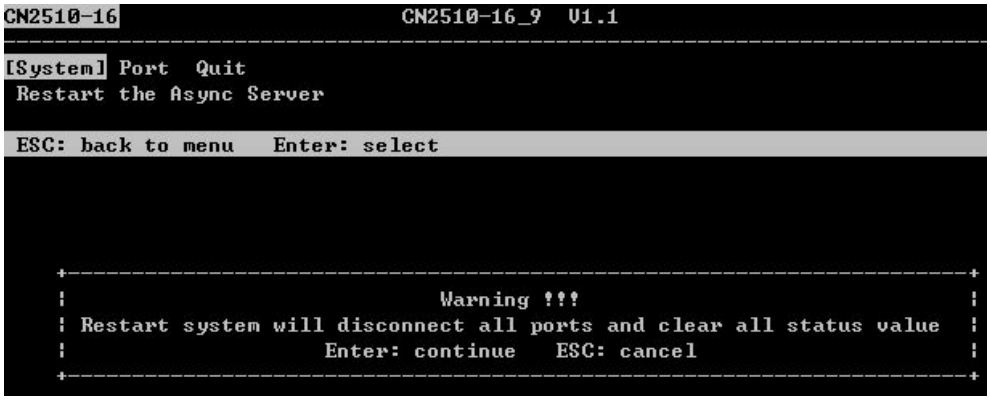


Restart

1. Return to **MAIN MENU** and select **Restart**.



2. Select **System**, and then press **Enter** to continue.



3. The system will restart and the Telnet/Console session will terminate. Enter **MAIN MENU** again to check whether the settings have been changed.

11

Setting up Network Printer

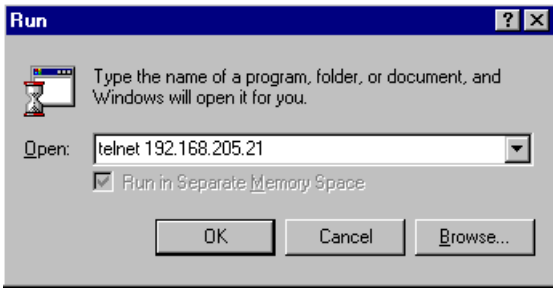
We describe here the steps for configuring Moxa CN2510 as a printer server. Up to 8/16 serial printers can be simultaneously connected to CN2510. The serial printer server function is configured through port menu, and is able to accommodate up to 16 ports. At the end of the chapter, the setting for one-port parallel printing is illustrated for both UNIX and Windows systems.

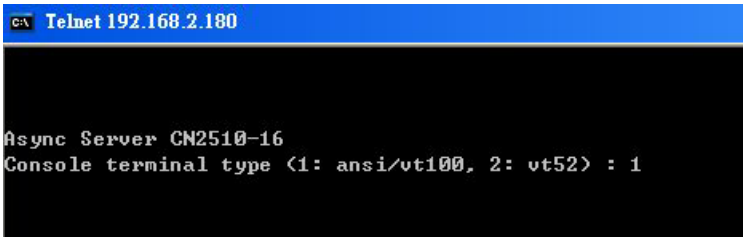
- **Configuring Port Operation Mode – Port Menu [Mode]**
  - Raw PRN Mode
  - LPD PRN Mode
- **Configuring Port Connection Setting – Port Menu [Line]**
- **Save**
- **Restart**
- **Setting up Unix Hosts**
  - Setting up a SCO Unix Host
  - Setting up a SOLARIS X86 Host
  - Setting up a LINUX Host
- **Setting up Windows Hosts**
  - Setting up a Windows NT Host
  - Setting up a Windows 2000 Host

Configuring Port Operation Mode – Port Menu [Mode]

Open Port Menu→Mode to install NT Real COM mode.

1. To enter CN2510 **MAIN MENU**, use either Telnet from a network terminal, or connect directly to CN2510 Async Server with a console terminal. Select **ansi/vt100**, and then press **Enter**. Refer to chapter 2 for more details about how to enter **MAIN MENU**.

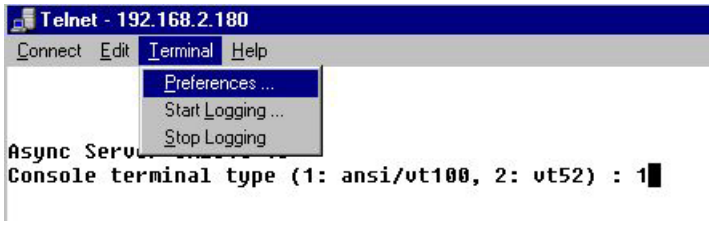


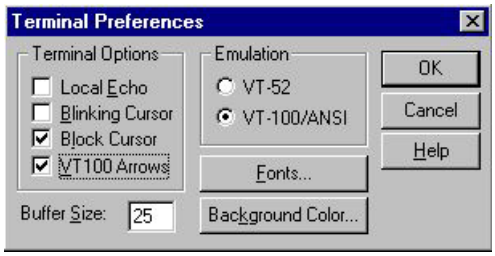


2. The table below is the **MAIN MENU** of CN2510 Async Server. Before you begin, familiarize yourself with the cursor movement functions before starting the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

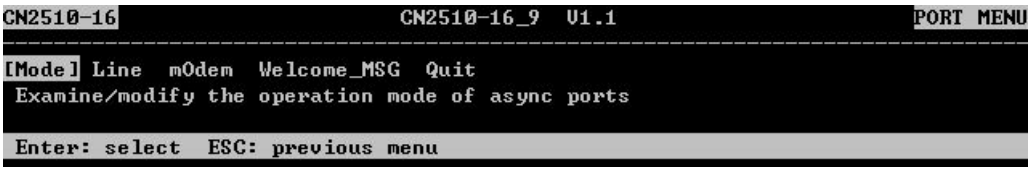
If you have problems using the arrow keys to move the cursor in Windows 9x or NT environment, click on the **Terminal** menu, choose **Preferences**, and then select **VT100 Arrows** in the **Terminal Preferences** window. Click on **OK** to go back to the **MAIN MENU**, and then it can work properly now.



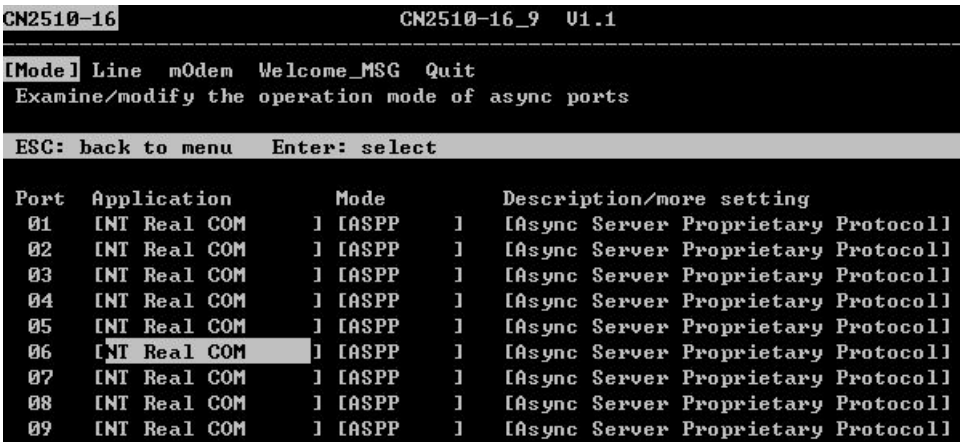


3. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

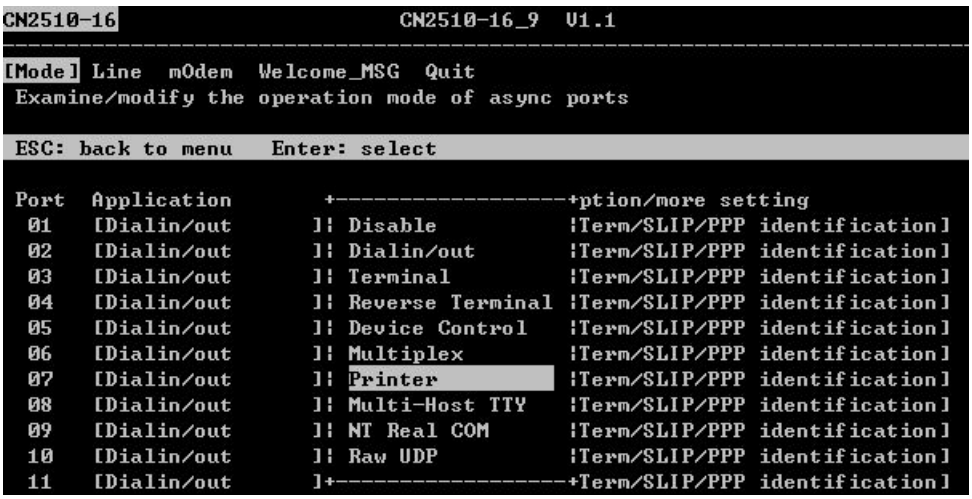
4. In **PORT MENU**, select **Mode**, and then press **Enter**.



5. In **Mode**, use the arrow keys to move the cursor to the application corresponding to serial ports. Here we use Port 6 as an example.



6. Press **Enter** to open the application window. Use **Up/Down** Arrow keys to select **Printer**, and then press **Enter** to confirm.



7. Repeat Step 5 to 6 to configure other device control port settings. For example, you can follow the steps described below to configure Port 1 to Port 8 for **Printer** application.

```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------------
[Mode] Line  mOdem  Welcome_MSG  Quit
 Examine/modify the operation mode of async ports

 ESC: back to menu   Enter: select

 Port  Application        Mode         Description/more setting
  01   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  02   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  03   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  04   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  05   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  06   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  07   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  08   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  09   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  10   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
```

Raw PRN Mode

1. Move cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.

```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------------
[Mode] Line  mOdem  Welcome_MSG  Quit
 Examine/modify the operation mode of async ports

 ESC: back to menu   Enter: select

 Port  Application        Mode         Description/more setting
  01   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  02   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
  03   [Printer         ] [RAW PRN ]   [Raw serial port printer mode      ]
```

2. **Printer Description/More Setting** window.

```
+-----------------------------------------+
| Group               : [Group01]         |
| TCP port number     : [2048]            |
| TCP alive check time: [0 ] minutes      |
+-----------------------------------------+
```

Setting	Value	Notes	Necessity
Group	Group 01-16	Group the printers so that printers in the same group can share the printing load.	Optional
TCP port number	2048-2063	Setting depends on the group setting.	Fixed
TCP alive check time	0-99 minutes	Specify the time slice for checking whether the TCP connection is alive. If no response, CN2510 will reset the port and disconnect the original connection.	Optional

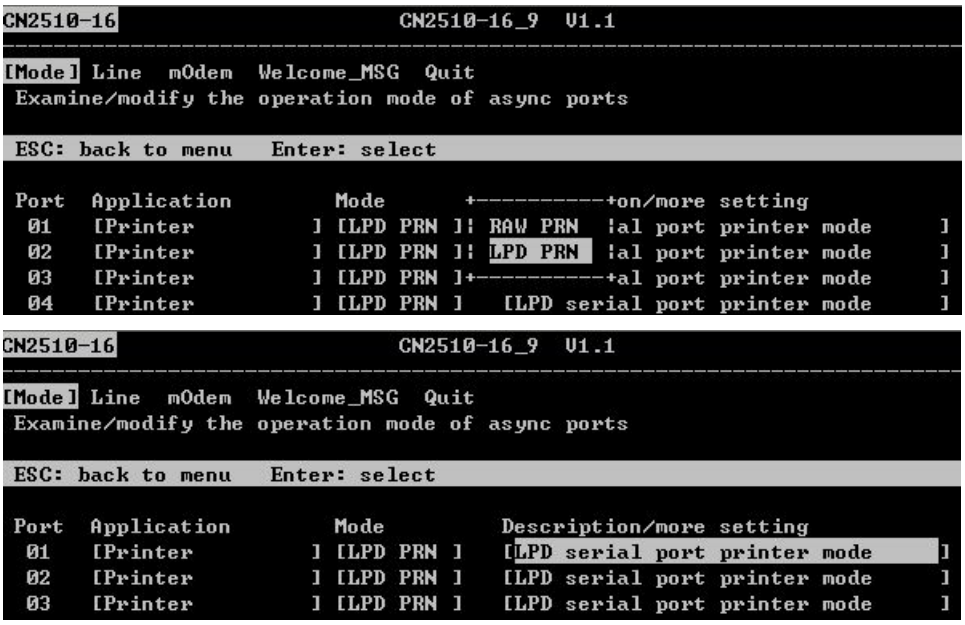
Group	TCP port number	Group	TCP port number
01	2048	09	2056
02	2049	10	2057
03	2050	11	2058
04	2051	12	2059
05	2052	13	2060
06	2053	14	2061
07	2054	15	2062
08	2055	16	2063

3. Repeat the steps above to set all Fix TTY ports.

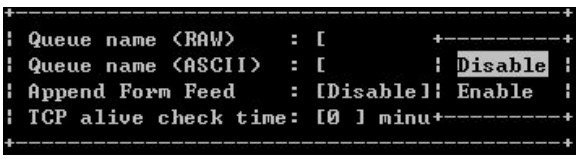
4. Press **Esc** to return to **PORT MENU**.

LPD PRN Mode

1. Move cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.



2. **Printer Description/More Setting** window.



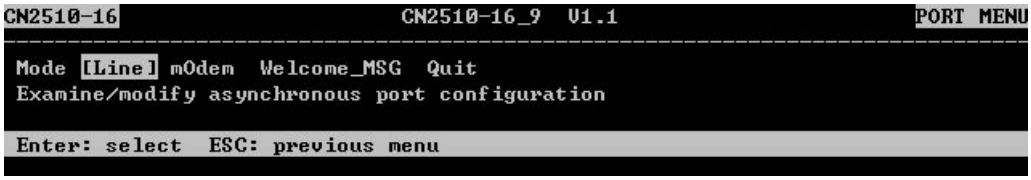
Setting	Value	Notes	Necessity
Queue name (RAW)	Letters	Specify print queue's name (in RAW mode)	Fixed
Queue name (ASCII)	Letters	Specify print queue's name (in ASCII mode)	Fixed
Append From Feed	Enable/Disable	Specify paging	Optional
TCP alive check time	0-99 minutes	Specify the time slice for checking whether the TCP connection is alive. If no response, CN2510 will reset the port and disconnect the original connection.	Optional

Configuring Port Setting – Port Menu [Line]

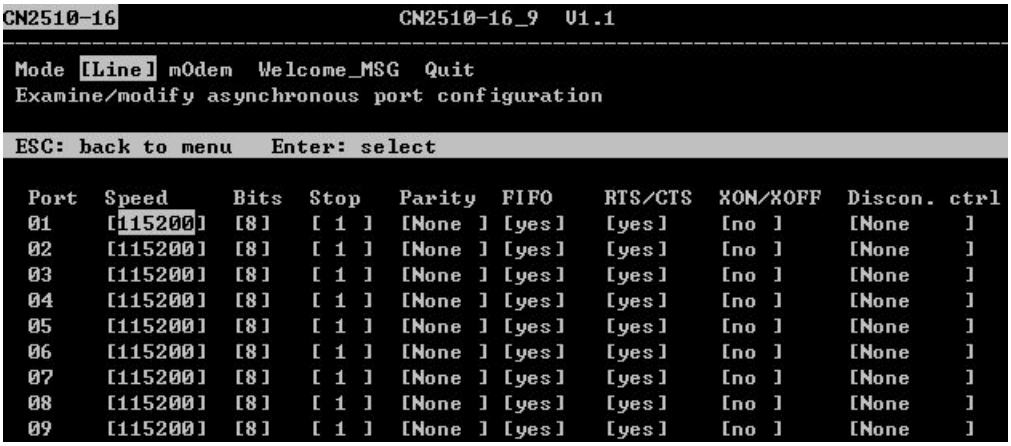
In **PORT MENU [Line]**, you can set line settings for the particular type of device being used.

1. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

2. In **PORT MENU**, select **Mode**, and then press **Enter**.



3. Select the ports and configure the settings.



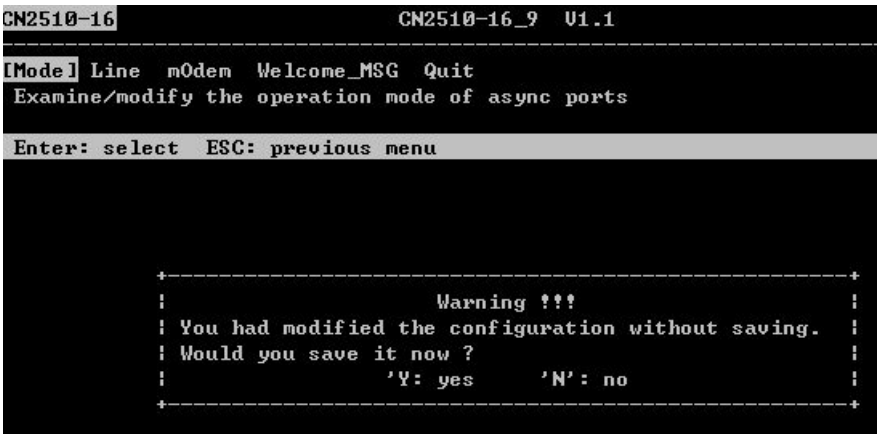
Setting	Value	Notes
Speed	50 bps to 230.4 Kbps	Baud rate
Bits	5/6/7/8	Data bits
Stop	1/2	Stop bits
Parity	None, Even, Odd, Mark, Space	Parity Check
FIFO	Yes/No	FIFO setting
RTS/CTS	Yes/No	Hardware Flow Control
XON/XOFF	Yes/No	Software Flow Control
Discon. ctrl	None/DSR off/DCD off	Disconnection condition when DSR or DCD signal is off

4. Repeat the step above to configure all functions.

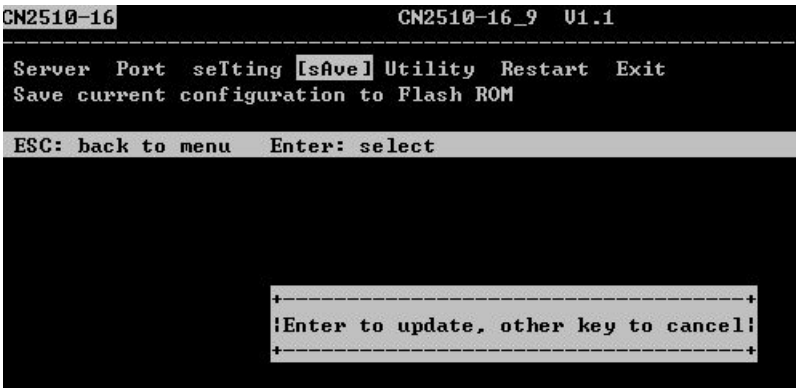
5. Press **ESC** to return the **Port Menu**.

Save

1. Press **Y** to save previous settings when exiting **PORT MENU**.

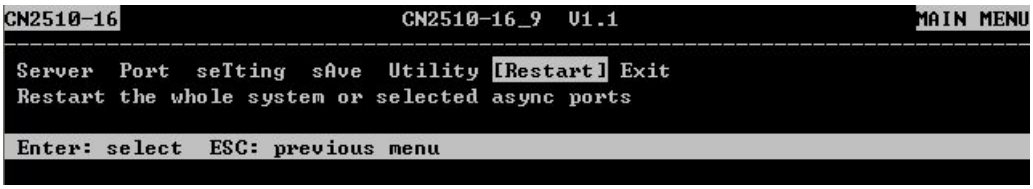


2. You may also save later. In **MAIN MENU**, select **sAve** to save all changed settings, and then press **Enter** to confirm.

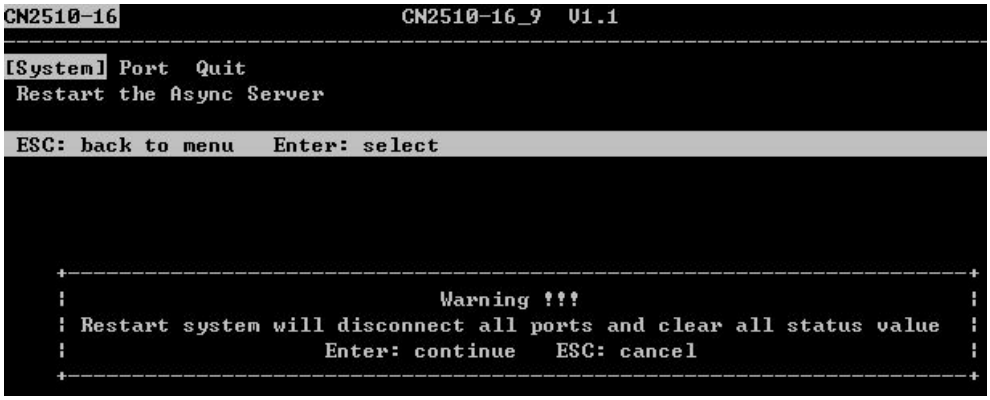


Restart

1. Return to **MAIN MENU** and select **Restart**.



2. Select **System**, and then press **Enter** to continue.



3. The system will restart and the Telnet/Console session will terminate. Enter **MAIN MENU** again to check whether the settings have been changed.

Setting up Unix Hosts

UNIX uses the RLP program for remote parallel printing. For serial printing, Moxa provides the `asprint` utility program, which consists of two files, `asprint.c` and `asprint.mak`. First uncompress `printer.tar.Z` to the `\printer` directory, and then locate the files `asprint.c` and `asprint.mak`. To compile and link, you may need to modify the source file `asprint.c`. For instance, in SCO UNIX you must link to the `libnls.a` library, in Solaris to `libnsl.a`, and in Venix to the `libnsl_s.a`.

Setting up a SCO Unix Host

Steps	SCO UNIX Command	Description
Uncompress all programs	#tar /dev/fd0 ./	
Uncompress printer.tar.Z to ./printer	#tar xvf printer.tar.Z	
compile/link	#make -f sco_unix.mak	
make printer node	#mknod /dev/iop1 p	Create a unique pipe name for each printer group. Since there are 16 groups of TCP port numbers (from 2048 to 2063), you need to create 16 respective pipe names. For example: iop1, iop2, iop3, etc.
set it to printer	#chown lp /dev/iop1	Change the pipe owner to 1p
set rw	#chmod 600 /dev/iop1	Change access permission to 600 or rw-----
set printer name	#/usr/lib/lpadmin -pLaser1 -v/dev/iop1	Redirect the printer spooler to write to pipe 'iop1'. Assumes the printer name is Laser1.
execute asprint for Group 01	#/asprint /dev/iop1 'CN2510 IP address' 2048 &	Start 'asprint' utility to read from pipe 'iop1' and write to the CN2510 printer port. '/dev/iop1': the device name the spooler

		is writing to. 'CN2510': the host name of the CN2510 as defined in /etc/hosts, or its IP address. '2048': the TCP port number (Group01) of the printer port on the CN2510.
accept printer Laser1	#/usr/lib/accept Laser1	Set Laser 1 to accept print request.
enable Laser1	#enable printer Laser1	enable Laser1
print file to Laser1	#lp -dLaser1 file_name	send print job to the CN2510
Repeat		Repeat the above steps to set up another printer. For printers in the same group, it is not necessary to repeat every step.

Setting up a SOLARIS X86 Host

Steps	SCO UNIX Command	Description
Set free the occupied Floppy disk	#/etc/init.d/volmgt stop	
Uncompress all programs	#tar /dev/fd0 ./	
Uncompress printer.tar.Z to ./printer	#tar xvf printer.tar.Z	
compile/link	#make -f sco_unix.mak	
make printer node	#mknod /dev/iop1 p	Create a unique pipe name for each printer group. Since there are 16 groups of TCP port numbers (from 2048 to 2063), you need to create 16 respective pipe names. For example: iop1, iop2, iop3, etc.
set it to printer	#chown lp /dev/iop1	Change the pipe owner to 1p
set rw	#chmod 600 /dev/iop1	Change access permission to 600 or rw-----
set printer name	#/usr/lib/lpadmin -pLaser1 -v/dev/iop1	Redirect the printer spooler to write to pipe 'iop1'. Assumes the printer name is Laser1.
execute asprint for Group 01	#/asprint /dev/iop1 'CN2510 IP address' 2048 &	Start 'asprint' utility to read from pipe 'iop1' and write to the CN2510 printer port. '/dev/iop1': the device name the spooler is writing to. 'CN2510': the host name of the CN2510 as defined in /etc/hosts, or its IP address. '2048': the TCP port number (Group01) of the printer port on the CN2510.
accept printer Laser1	#/usr/lib/accept Laser1	Set Laser 1 to accept print request.
enable Laser1	#enable printer Laser1	enable Laser1
print file to Laser1	#lp -dLaser1 file_name	send print job to the CN2510
Repeat		Repeat the above steps to set up another printer. For printers in the same group, it is not necessary to repeat every step.

Setting up a LINUX Host

Steps	SCO UNIX Command	Description
Uncompress all programs	#tar /dev/fd0 ./	
Uncompress printer.tar.Z to ./printer	#tar xvf printer.tar.Z	
compile/link	#make -f sco_unix.mak	
make printer node	#mknod /dev/iop1 p	Create a unique pipe name for each printer group. Since there are 16 groups of TCP port numbers (from 2048 to 2063), you need to create 16 respective pipe names. For example: iop1, iop2, iop3, etc.
set it to printer	#chown lp /dev/iop1	Change the pipe owner to 1p
set rw	#chmod 600 /dev/iop1	Change access permission to 600 or rw-----
set printer name	#/usr/lib/lpadmin -pLaser1 -v/dev/iop1	Redirect the printer spooler to write to pipe 'iop1'. Assumes the printer name is Laser1.
	add one line to /etc/printcap file Laser1:lp=/dev/iop1,sd=/usr/spool/Laser1	
make spool directory	#mkdir /usr/spool/Laser1	
execute asprint for Group 01	#/asprint /dev/iop1 'CN2510 IP address' 2048 &	Start 'asprint' utility to read from pipe 'iop1' and write to the CN2510 printer port. '/dev/iop1': the device name the spooler is writing to. 'CN2510': the host name of the CN2510 as defined in /etc/hosts, or its IP address. '2048': the TCP port number (Group01) of the printer port on the CN2510.
accept printer Laser1	#lpr -PLaser1 file_name.txt	Set Laser 1 to accept print request.
Repeat		Repeat the above steps to set up another printer. For printers in the same group, it is not necessary to repeat every step.

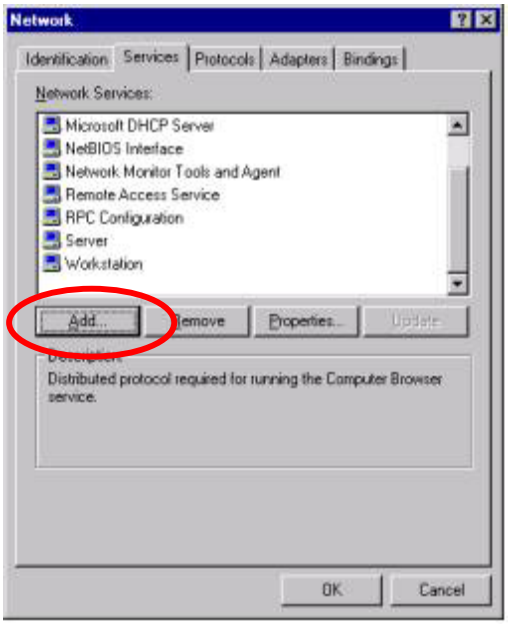
Setting up Windows Hosts

Windows uses LPD/LPR application to access printers. Moxa provides LPD PRN mode for serial printing. In this section, we explain how to install a LPD/LPR printer in a Windows NT/2000 environment to access the serial printer connected to a CN2510 Async Server.

Setting up a Windows NT Host

1. First, you need to add TCP/IP printing service to your Windows NT.

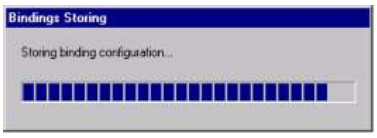
2. Go to **Start → Settings → Control Panel → Network**. Click on **Services** tab, and then select **Add**.



3. Select **Microsoft TCP/IP Printing**, and then click on **OK** to continue.

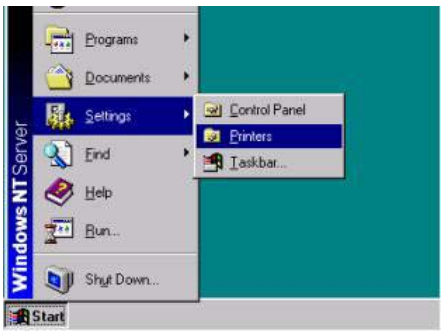
4. Insert Windows NT installation CD to your computer's CD driver.

5. Allow the Microsoft TCP/IP Printing service to be added, and reboot your computer.



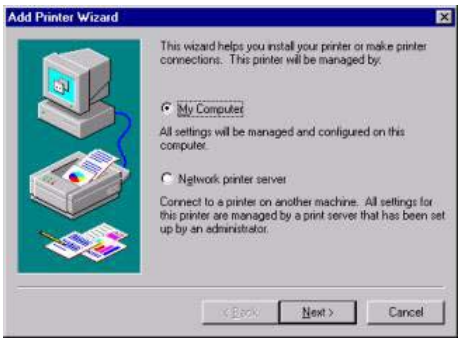
6. Now you can start configuring your LPR/LPD Printer.

7. Click on **Start → Settings → Printers**.

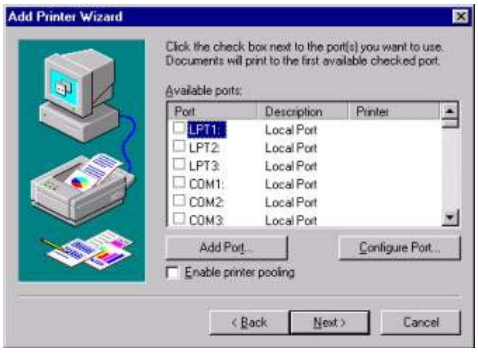


8. Click on **Add Printer** to start and **Add Printer Wizard**.

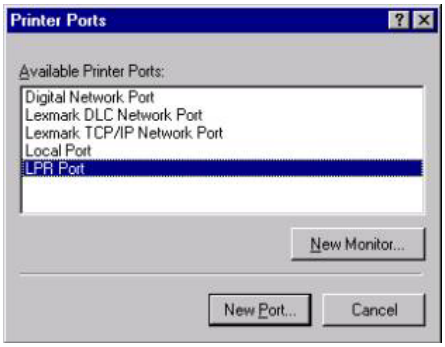
9. Select **My Computer**, and then click on **Next** to continue.



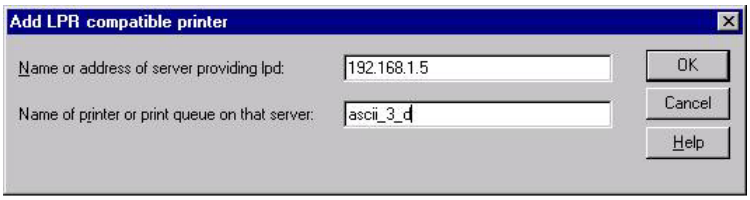
10. In the window that opens next, click on **Add Port**.



11. Select LPR Port.

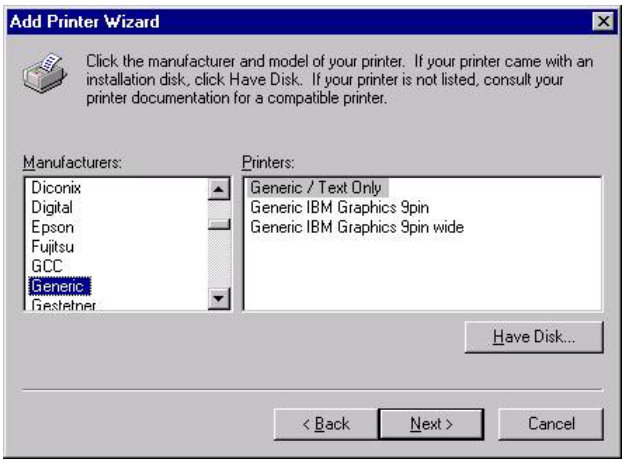


12. Enter CN2510's IP Address, and then enter Print Queue's name. Click on **OK** to continue.

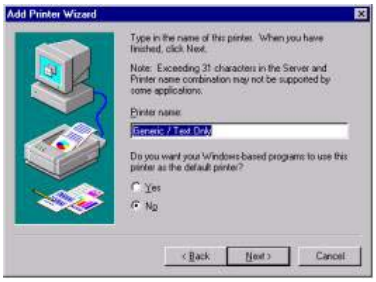


13. Select **logical printer port** for the LPR port you just added. It should be the IP address of the port.

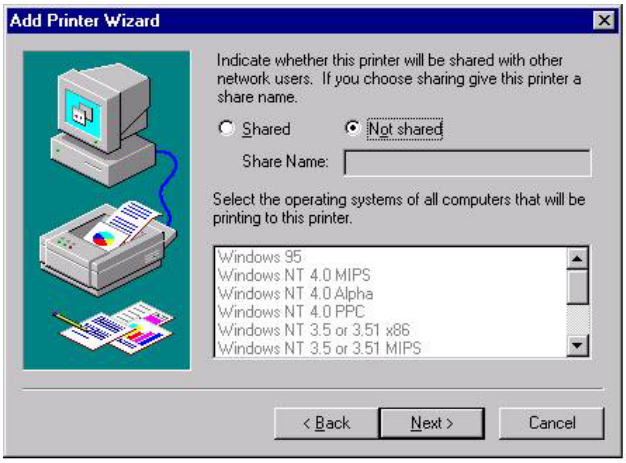
14. Select the printer's manufacturer and model name. Click on **Next** to continue.



15. Enter the printer's name, and select yes if you wish to set this printer as default printer. Click on **Next** to continue.



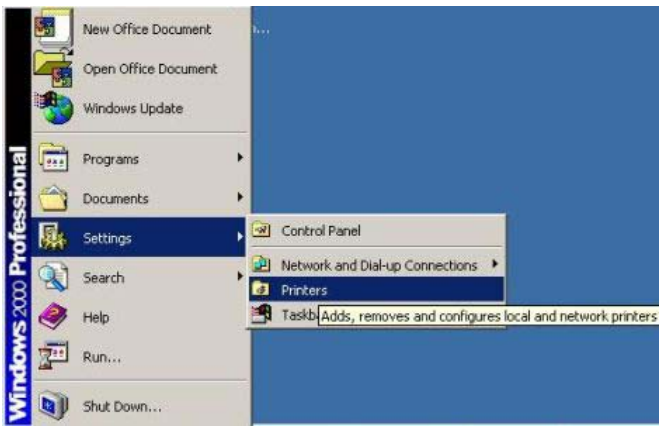
16. Select **Shared** when prompted with questions asking if the printer is to be shared or not, and then enter the name of the shared printer.



17. Perform printing test pages if needed. Click on **OK** to finish.

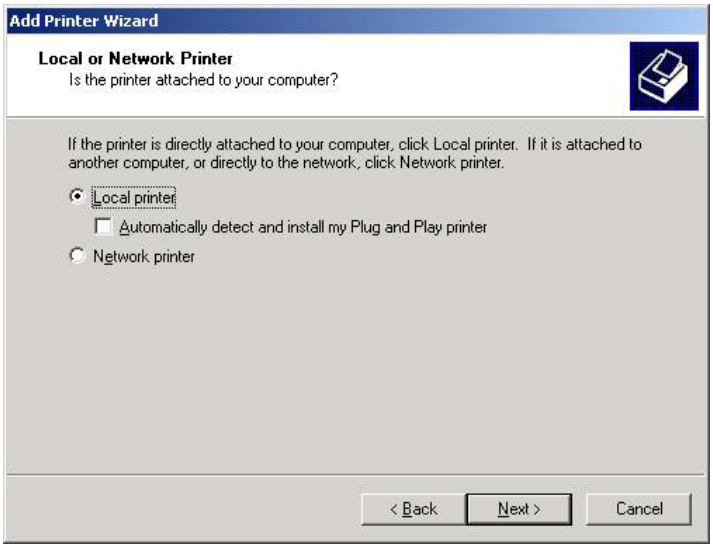
Setting up a Windows 2000 Host

1. Click on **Start → Settings → Printers**.

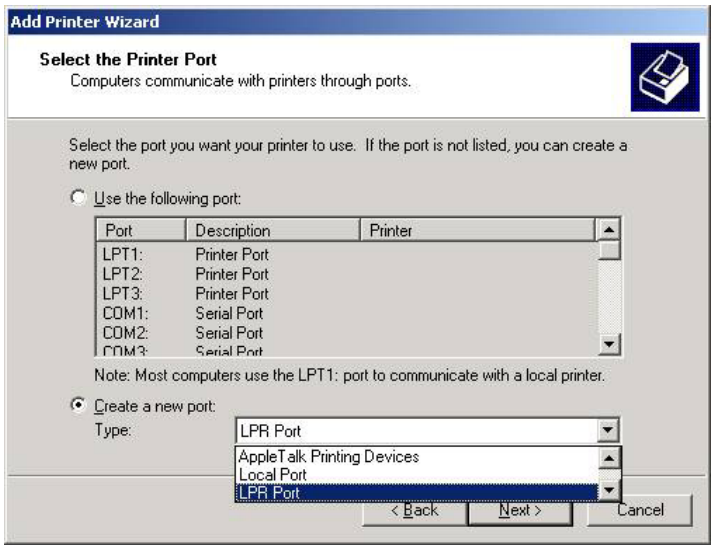


2. Click on **Add Printer** to start and **Add Printer Wizard**.
3. A Welcome message will appear. Click on Next to continue.

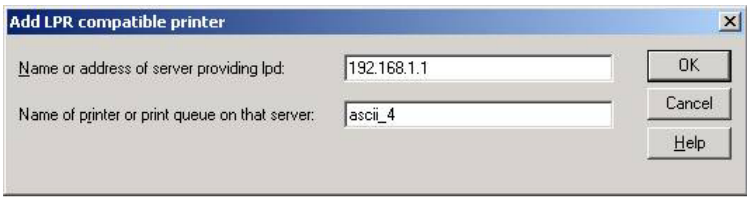
4. Select **Local printer**, and click on **Next** to continue.



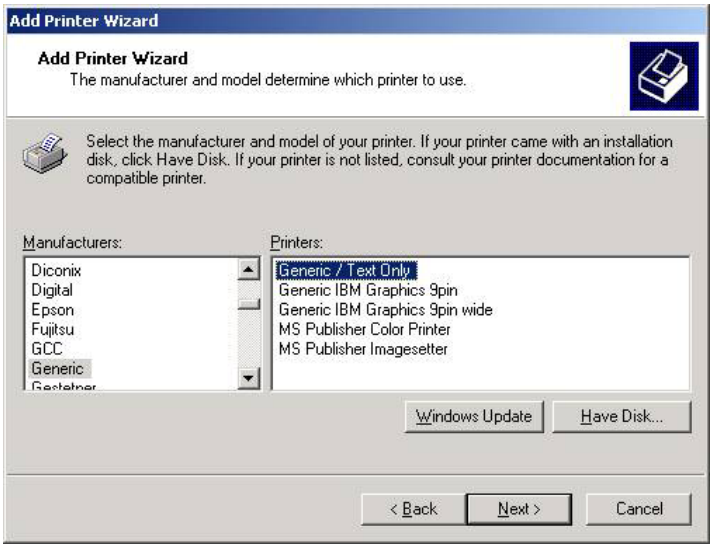
5. Select Create a new port:, and select LPR Port from the drop down list.



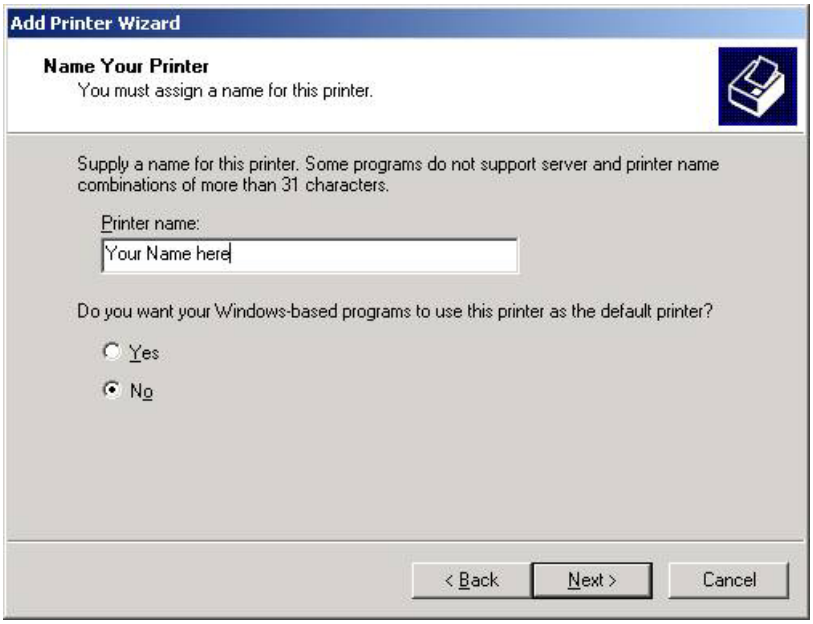
6. Enter CN2510's IP Address, and then enter Print Queue's name. Click on **OK** to continue.



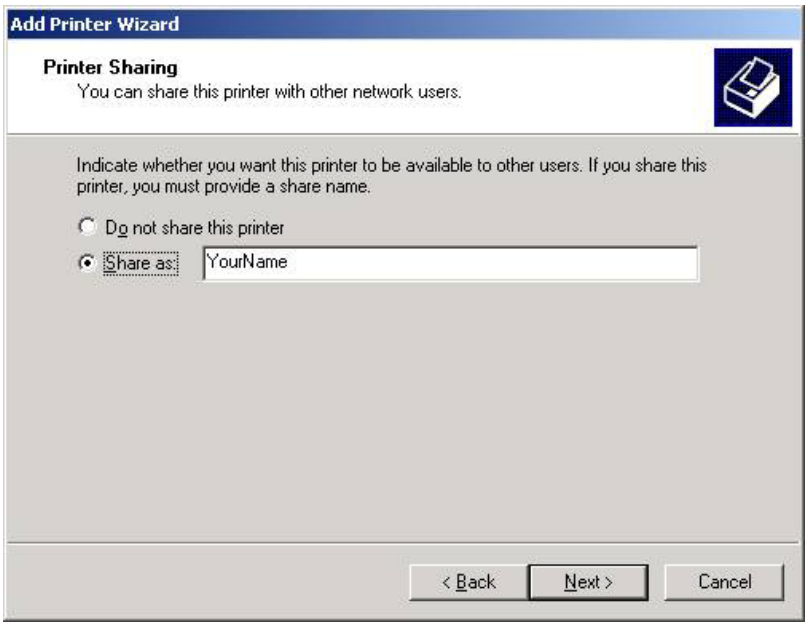
7. Select the printer's manufacturer and model name. Click on **Next** to continue.



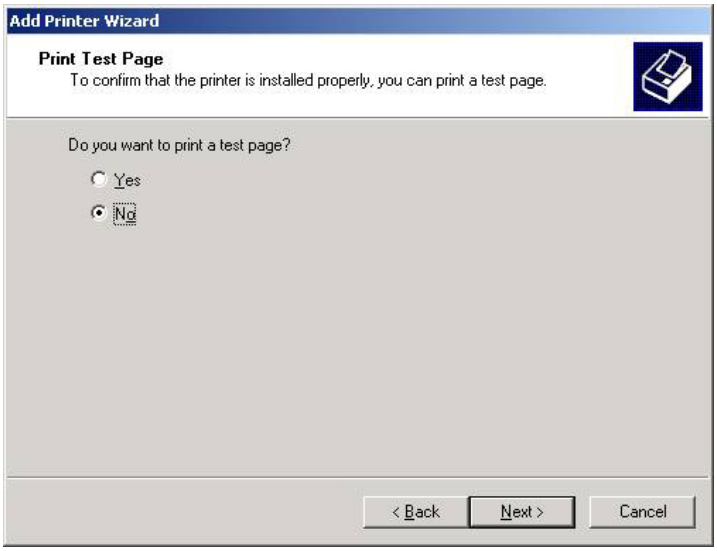
8. Enter the printer's name, and select yes if you wish to set this printer as default printer. Click on **Next** to continue.



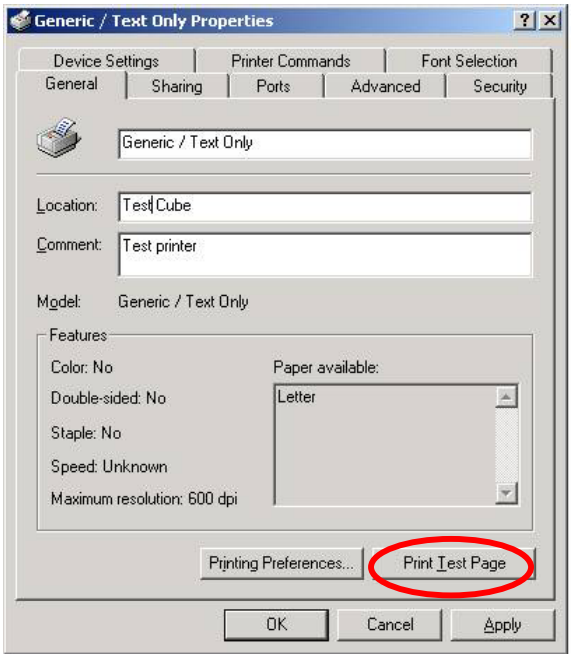
9. Select **Shared** when prompted with questions asking if the printer is to be shared or not, and then enter the name of the shared printer.



10. You need to reboot Windows 2000 to enable the printer you just added. When asked if you want to print a test page, select **No**. Click on **Next** to continue.



11. If you want to print a test page, reboot Windows 2000, select this printer, and click on **Print Test Page**.



12

Setting up Multiplexor Access

We describe here the steps for configuring Moxa CN2510 as a Multiplexor and De-Multiplexor. Using the Multiplexor/De-Multiplexor applications requires two Async Servers, one attached to a host with a multi-port serial board and several serial lines, and the other connected to external devices. In this way, the original host can use a TCP/IP connection to control serial devices from a remote location.

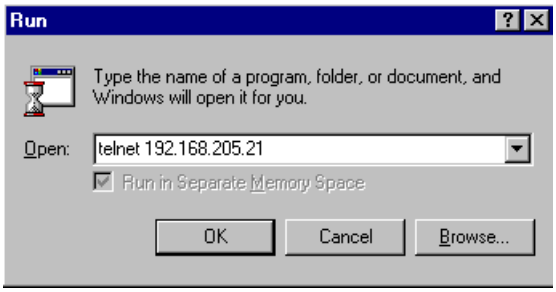
The following topics are covered in this chapter:

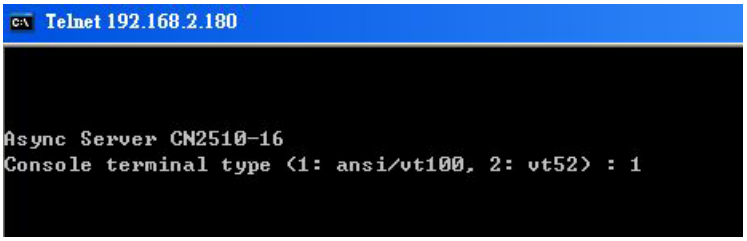
- **Configuring Port Operation Mode – Port Menu [Mode]**
  - RTELNET Mode
  - TERM_BIN Mode
- **Configuring Port Connection Setting – Port Menu [Line]**
- **Save**
- **Restart**

Configuring Port Operation Mode – Port Menu [Mode]

Open Port Menu→Mode to install NT Real COM mode.

1. To enter CN2510 **MAIN MENU**, use either Telnet from a network terminal, or connect directly to CN2510 Async Server with a console terminal. Select **ansi/vt100**, and then press **Enter**. Refer to chapter 2 for more details about how to enter **MAIN MENU**.

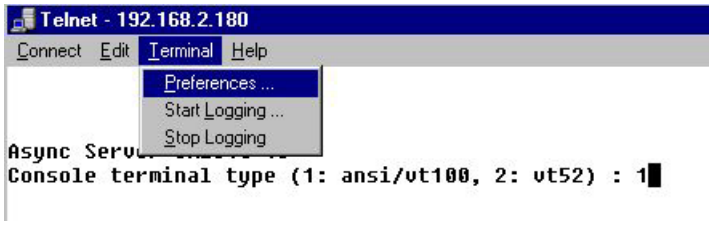


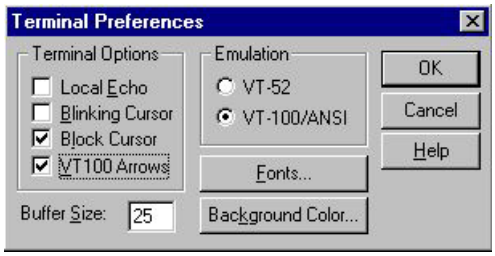


2. The table below is the **MAIN MENU** of CN2510 Async Server. Before you begin, familiarize yourself with the cursor movement functions before starting the configuration process.

	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

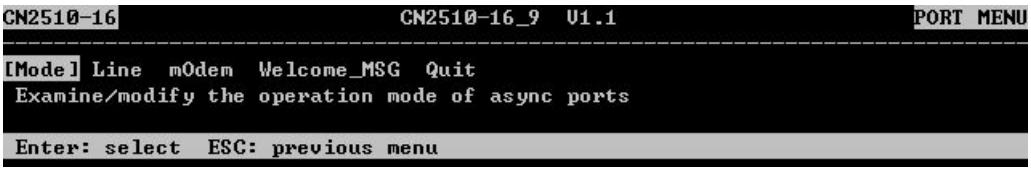
If you have problems using the arrow keys to move the cursor in Windows 9x or NT environment, click on the **Terminal** menu, choose **Preferences**, and then select **VT100 Arrows** in the **Terminal Preferences** window. Click on **OK** to go back to the **MAIN MENU**, and then it can work properly now.



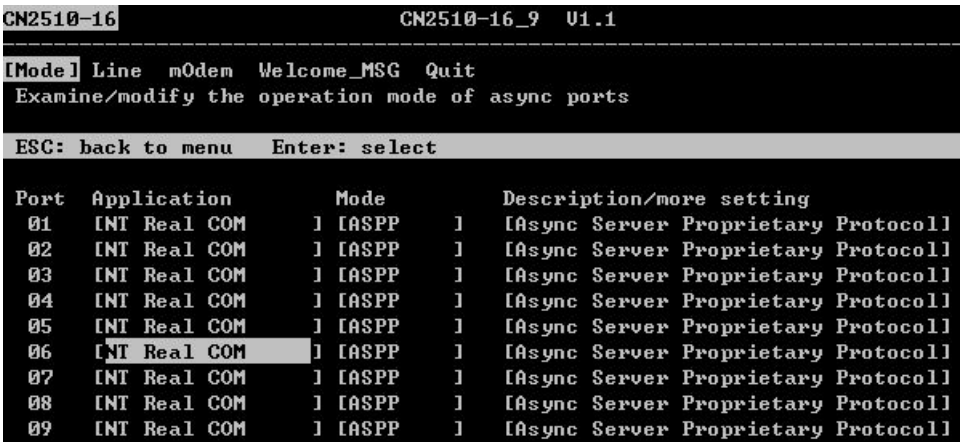


3. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

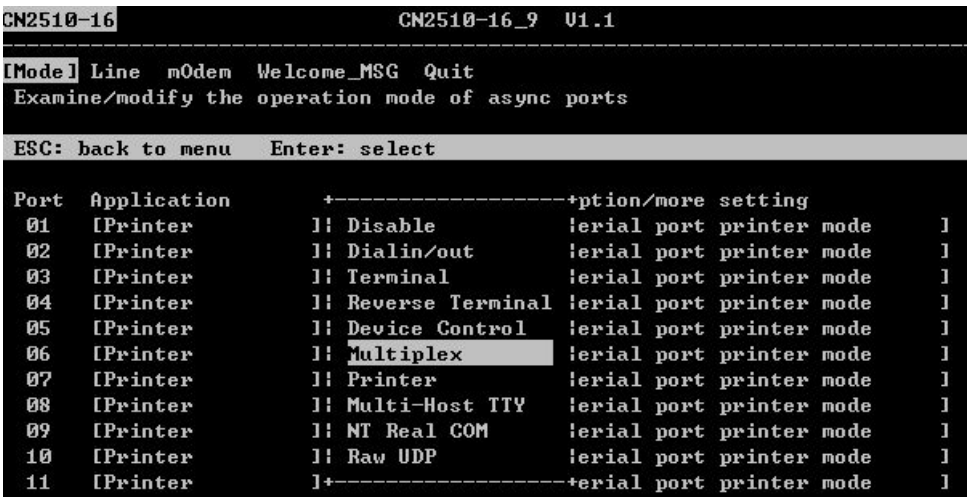
4. In **PORT MENU**, select **Mode**, and then press **Enter**.



5. In **Mode**, use the arrow keys to move the cursor to the application corresponding to serial ports. Here we use Port 6 as an example.



6. Press **Enter** to open the application window. Use **Up/Down** Arrow keys to select **Multiplex mode**. Press **Enter** to confirm.



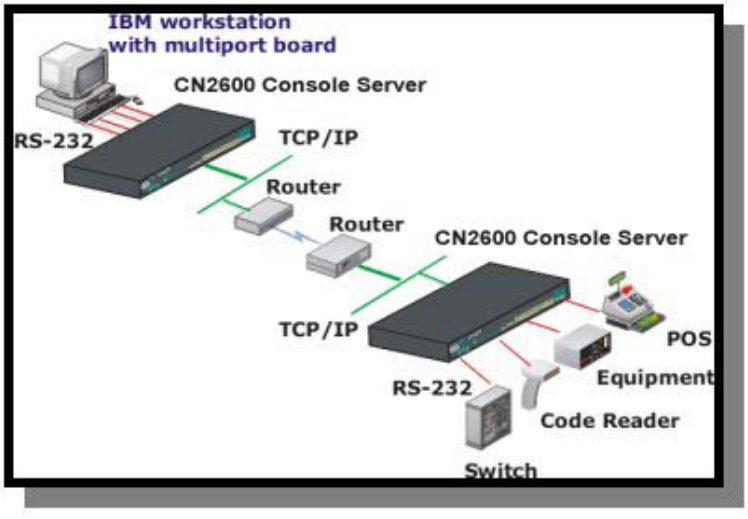
7. Repeat Step 5 to 6 to configure other device control port settings. For example, you can follow the steps described below to configure Port 1 to Port 16 for **Multiplex** application.

```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------------
[Mode] Line  mOdem  Welcome_MSG  Quit
 Examine/modify the operation mode of async ports

 ESC: back to menu   Enter: select

 Port  Application        Mode          Description/more setting
  01   [Multiplex       ] [RTELNET ]   [Reverse Telnet mode                ]
  02   [Multiplex       ] [RTELNET ]   [Reverse Telnet mode                ]
  03   [Multiplex       ] [RTELNET ]   [Reverse Telnet mode                ]
  04   [Multiplex       ] [RTELNET ]   [Reverse Telnet mode                ]
  05   [Multiplex       ] [RTELNET ]   [Reverse Telnet mode                ]
  06   [Multiplex       ] [RTELNET ]   [Reverse Telnet mode                ]
  07   [Multiplex       ] [RTELNET ]   [Reverse Telnet mode                ]
  08   [Multiplex       ] [RTELNET ]   [Reverse Telnet mode                ]
  09   [Multiplex       ] [RTELNET ]   [Reverse Telnet mode                ]
  10   [Multiplex       ] [RTELNET ]   [Reverse Telnet mode                ]
```

8. Repeat the previous step for the 2nd CN2510. Select **Application** type for all ports as **Multiplex** but with **TERM_BIN** mode.

```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------------
[Mode] Line  mOdem  Welcome_MSG  Quit
 Examine/modify the operation mode of async ports

 ESC: back to menu   Enter: select

 Port  Application        Mode          Description/more setting
  01   [Multiplex       ] [TERM_BIN]   [Binary Terminal mode (1 session) ]
  02   [Multiplex       ] [TERM_BIN]   [Binary Terminal mode (1 session) ]
  03   [Multiplex       ] [TERM_BIN]   [Binary Terminal mode (1 session) ]
  04   [Multiplex       ] [TERM_BIN]   [Binary Terminal mode (1 session) ]
  05   [Multiplex       ] [TERM_BIN]   [Binary Terminal mode (1 session) ]
  06   [Multiplex       ] [TERM_BIN]   [Binary Terminal mode (1 session) ]
  07   [Multiplex       ] [TERM_BIN]   [Binary Terminal mode (1 session) ]
  08   [Multiplex       ] [TERM_BIN]   [Binary Terminal mode (1 session) ]
  09   [Multiplex       ] [TERM_BIN]   [Binary Terminal mode (1 session) ]
  10   [Multiplex       ] [TERM_BIN]   [Binary Terminal mode (1 session) ]
```

NOTE After setting up Multiplex ports, define RTELNET modes for the CN2510 that represents the serial host and TERM_BIN modes for the other CN2510.

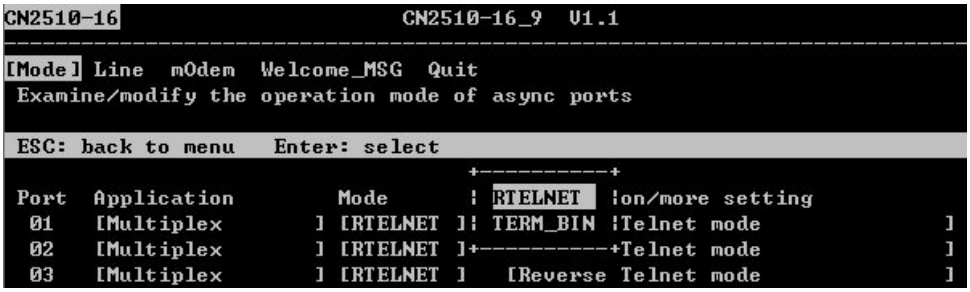


RTelnet Mode

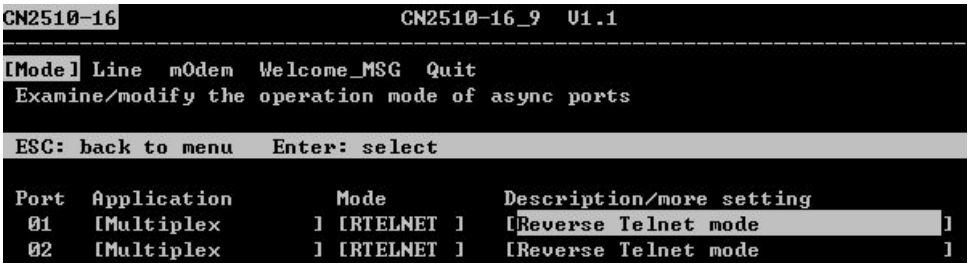
Reverse Telnet, or RTELNET, supports the Telnet program used by Ethernet hosts to login to serial hosts. Ethernet hosts recognize serial ports by the specified source IP address, or by the TCP port number followed by CN2510's IP address.

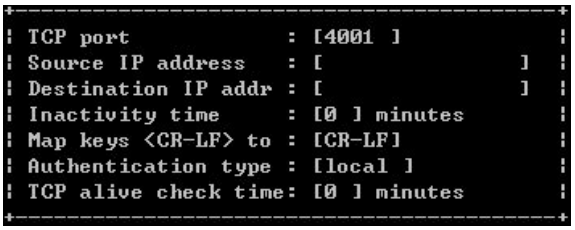
1. Move the cursor to the **Mode** column, and then press **Enter** to open the setting window.

2. Select **RTELNET**.



3. Move the cursor to **Description/more Setting** column, and then press **Enter** to open the setting window.





Setting	Value	Notes	Necessity
TCP port	number	Each of CN2510's serial ports is mapped to a TCP port. To avoid conflicts with TCP ports, set port numbers to 4001 for port1, 4002 for port2, etc. (like the default values).	Optional
Source IP address	IP address for the port	Specify an IP address for this port for application needs. If left blank, CN2510 will specify its own IP address, so you will need to set different TCP port numbers to avoid conflicts.	Optional
Destination IP addr	IP address	Assign a host IP address on the LAN for exclusive port access. If left blank, all hosts on the network will have access to this port.	Optional
Inactivity time	0-99 minutes	Idle time setting for auto-disconnection.	Optional

		0 min means no disconnection.	
Map Keys <CR-LF> to	CR/LF/CR-LF	When you enter <CR-LF> string, CN2510 will determine whether to send <CR>, <LF>, or <CR-LF>.	Optional
Authentication type	None/local /server	None: no certification needed. Local: Check the ID according to the User_table in SERVER MENU. Server: Check ID according to the external RADIUS server. Refer to Appendix C for RADIUS installation.	Optional
TCP alive check time	0-99 minutes	Specify the time slice for checking whether the TCP connection is alive. If no response, CN2500 will reset the port and disconnect the original connection.	Optional

4. Repeat the steps above to set all RTELNET ports.

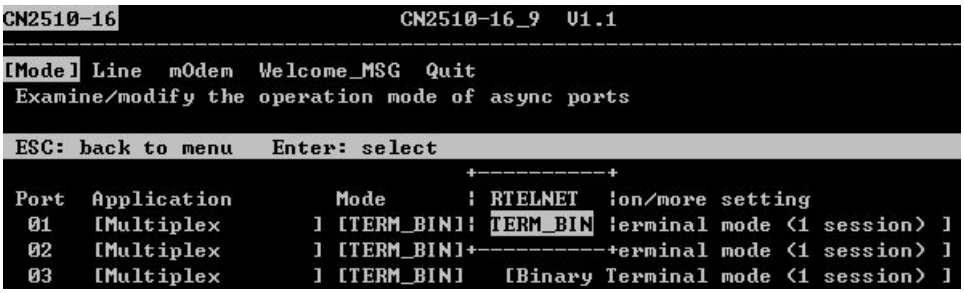
5. Press **Esc** to return to **PORT MENU**.

TERM_BIN Mode

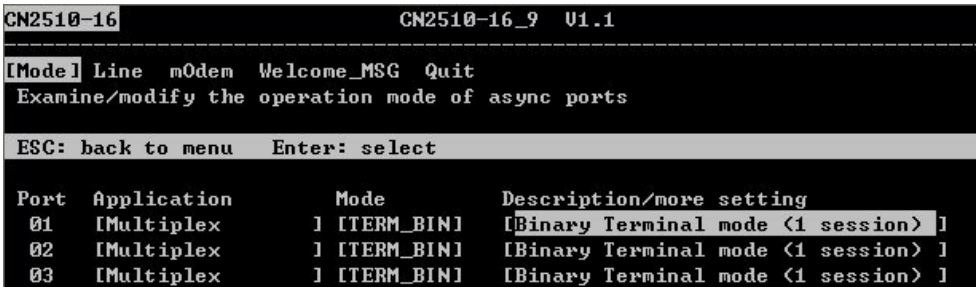
Terminal Binary, or TERM_BIN mode, supports automatic link to Ethernet hosts for Terminal or Telnet users. It redirects telnet requests to the specified Ethernet host. Below we describe how to set auto-link host and login ID information. Auto-linking one TERM_BIN port to a port in RTELNET mode provides a transparent link through the network.

1. Move the cursor to the **Mode** column of the corresponding port, and then press **Enter** to see two modes for **Multiplex** applications.

2. Select **TERM_BIN**.



3. Move cursor to the **Description/more setting** column, and then press **Enter** to open the setting window.



4. **TERM_BIN Description/More Setting** window. Type in the same entries shown to the right.

Setting	Value	Notes	Necessity
Quit Key	^E	Defines the Quit key used to disconnect the link between the current terminal session and the remote host. It may be left blank for binary communication.	Optional
Auto-link protocol	None/Telnet/ Rlogin	**[None]** Do not connect to host automatically. **[Telnet]** Connects to host automatically with Telnet **[Rlogin]** Connects to host automatically with Rlogin	Optional
Telnet TCP port	23	Enter a number or leave the space blank. If not specified, a default port 23 is used. If you want to use Telnet without a TCP port number, then set this option to 23.	Optional
Primary host IP	IP address or the name defined in the [Host] table	If specified, it designates a 'permanent' host to which the terminal will always be connected.	Optional
Link by input IP	Enable/Disable	For users to enter IP address manually for connection	Optional
Secondary host IP	IP address or the name defined in the [Host] table.	If specified, it designates a secondary 'permanent' host to which the terminal will be connected.	Optional
Auto-login prompt	ogin:	Send ID information when receiving this prompt. Since some prompts use "Login", others use "login", the prompt detection is defined as "ogin:".	Optional
Password prompt	assword:	Send Password information when receiving this prompt. Since some prompts use "Password", others use "password", the prompt detection is defined as "assword:".	Optional
Login user name	ID	ID information	Optional
Login password	Password	Password information	Optional
Terminal type	ansi	Terminal type for outgoing connection	Optional
Inactivity time	0-99 minutes	Idle time setting for auto-disconnection 0 min means no disconnection	Optional
Authentication type	None/local/server	**None:** No authentication is required. **Local:** Check ID according to **"User_table"** in "**SERVER MENU"**. You have to set user's information later in this chapter. **Server:** Check ID according to external RADIUS Server. Refer to Appendix C for RADIUS setup.	Optional
TCP alive check time	0-99 minutes	Specify the time slice for checking whether TCP connection is alive. If no response, CN2510 will reset the port and disconnect the original connection	Optional

5. Repeat the steps above to set all **TERM_BIN** ports.

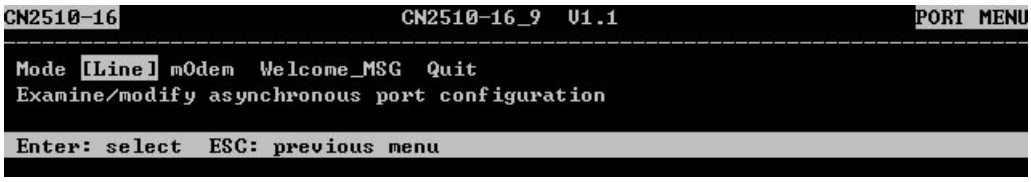
6. Press **Esc** to return to **PORT MENU**.

Configuring Port Setting – Port Menu [Line]

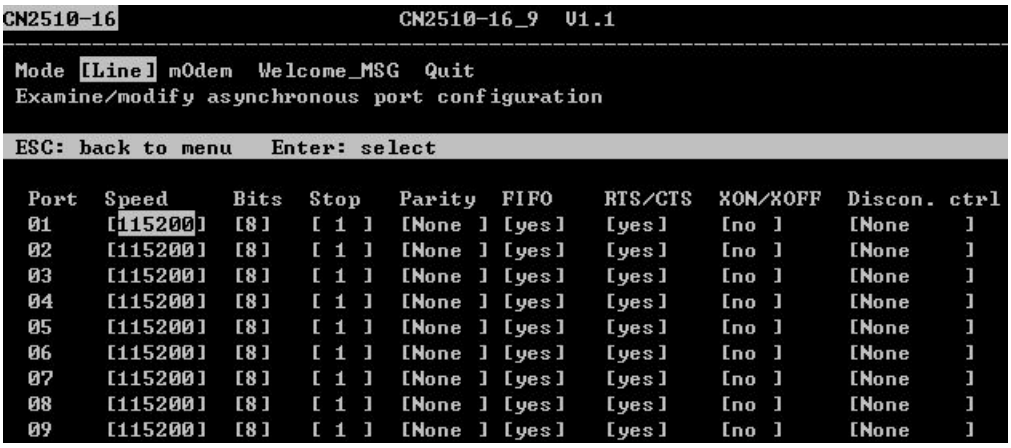
In **PORT MENU [Line]**, you can set line settings for the particular type of device being used.

1. In **MAIN MENU**, use the arrow keys to select **Port**, and then press **Enter**.

2. In **PORT MENU**, select **Mode**, and then press **Enter**.



3. Select the ports and configure the settings.



Setting	Value	Notes
Speed	50 bps to 230.4 Kbps	Baud rate
Bits	5/6/7/8	Data bits
Stop	1/2	Stop bits
Parity	None, Even, Odd, Mark, Space	Parity Check
FIFO	Yes/No	FIFO setting
RTS/CTS	Yes/No	Hardware Flow Control
XON/XOFF	Yes/No	Software Flow Control

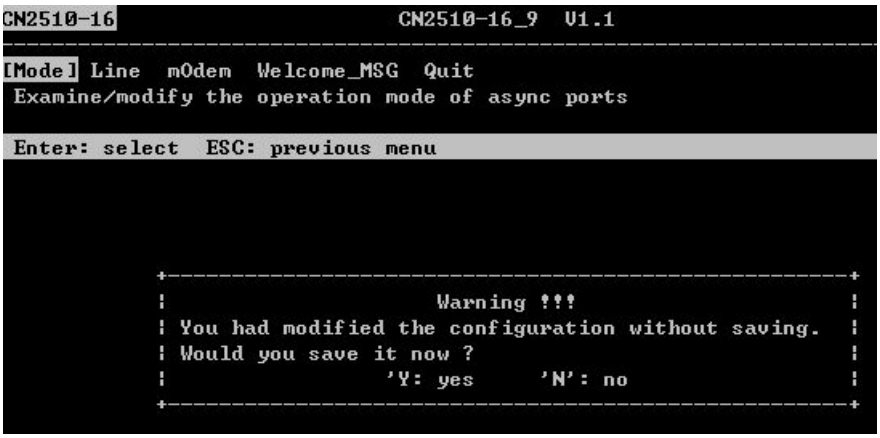
Discon. ctrl	None/DSR off/DCD off	Disconnection condition when DSR or DCD signal is off

4. Repeat the step above to configure all functions.

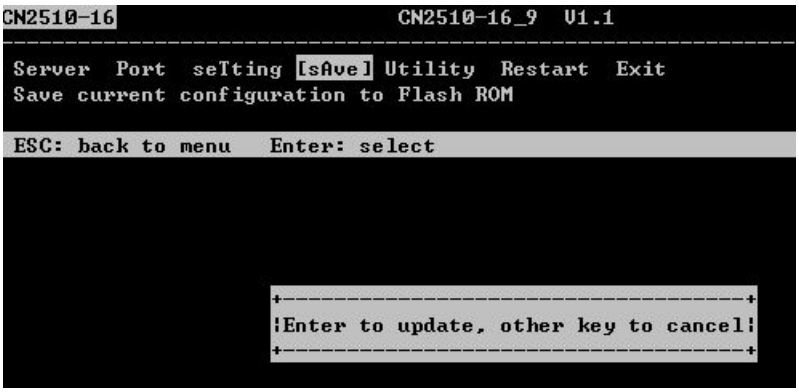
5. Press **ESC** to return the **Port Menu**.

Save

1. Press **Y** to save previous settings when exiting **PORT MENU**.

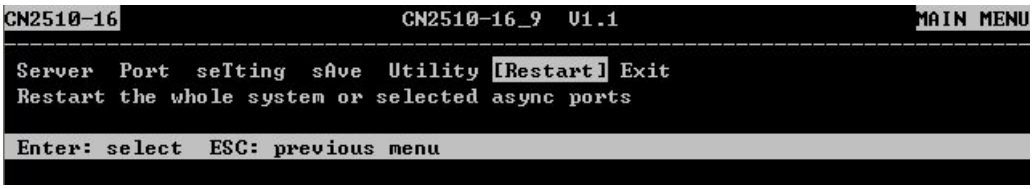


2. You may also save later. In **MAIN MENU**, select **sAve** to save all changed settings, and then press **Enter** to confirm.

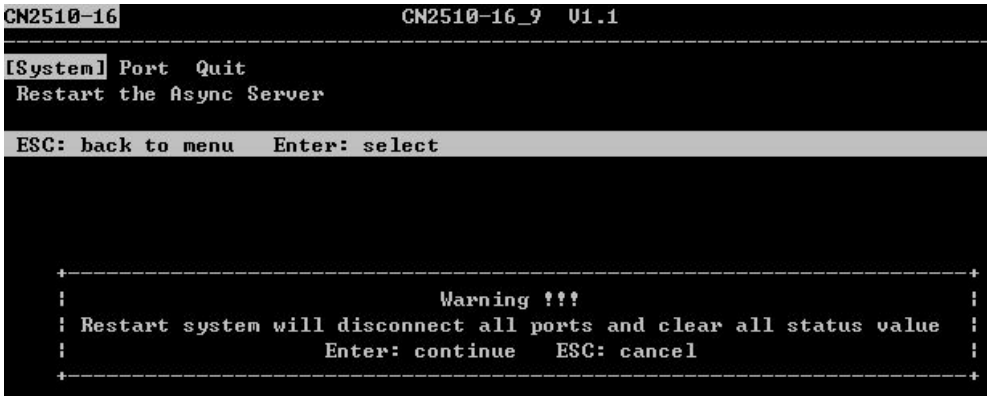


Restart

1. Return to **MAIN MENU** and select **Restart**.



2. Select **System**, and then press **Enter** to continue.



3. The system will restart and the Telnet/Console session will terminate. Enter **MAIN MENU** again to check whether the settings have been changed.

13

Setting up Routing

Routing is the main process used by Internet hosts to deliver packets. The Internet uses a hop-by-hop routing model, which means that each host or router that handles a packet examines the Destination Address in the IP header, computes the next hop that will bring the packet one step closer to its destination, and then delivers the packet to the next hop, where the process is repeated. Two things are needed to make this work.
(1) Routing tables must match destination addresses with next hops, and (2) routing protocols must determine the contents of these tables.

CN2510 provides easy-to-use routing functions, supporting both static routing tables and dynamic RIP1/RIP2 routing protocols. This chapter illustrates how to configure static routing tables and dynamic RIP1/RIP2 protocols. A few routing examples are also given to illustrate some basic routing concepts.

The following topics are covered in this chapter:

- **Configuring Dynamic RIP – Server [Adv.]**
  - What is RIP?
  - Configuring RIP
- **Configuring Static Routing Table – SERVER [Route_table]**
  - Configuring Routing Table
  - Static Routing Examples
- **Save**
- **Restart**

Configuring Dynamic RIP – SERVER [Adv.]

What is RIP?

RIP (Routing Information Protocol) is a widely used protocol for managing routing information within a self-contained network, such as a corporate LAN (Local Area Network) or an interconnected group of such LANs.

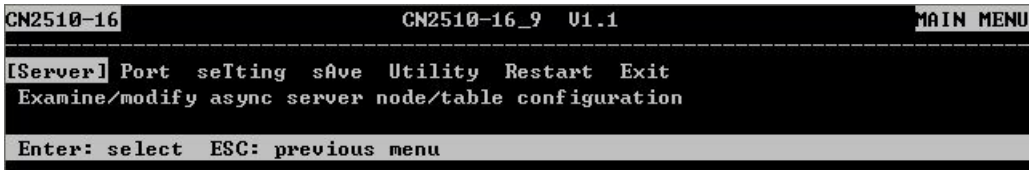
Using RIP, a gateway host with a router sends its entire routing table, which lists all the other hosts it knows about, to its closest neighbor host every 30 seconds. The neighbor host in turn will pass this information on to its closest neighbor, and so on, until all hosts within the network have the same routing path knowledge. This state is known as network convergence. RIP uses a hop count as a way of determining network distance. (Other protocols use more sophisticated algorithms that also include timing.) After receiving a packet headed for a specific destination, a network host with a router uses the routing table information to determine the next host to route the packet to.

RIP is considered an effective solution for small homogeneous networks. For larger, more complicated networks, transmitting the entire routing table every 30 seconds can bog down the network with a lot of extra traffic.

RIP 2 is an extension of RIP. Its purpose is to expand the amount of useful information contained in RIP packets, and to add security elements. RIP version 2 recently became the standard version of RIP, and the original RIP is no longer in use.

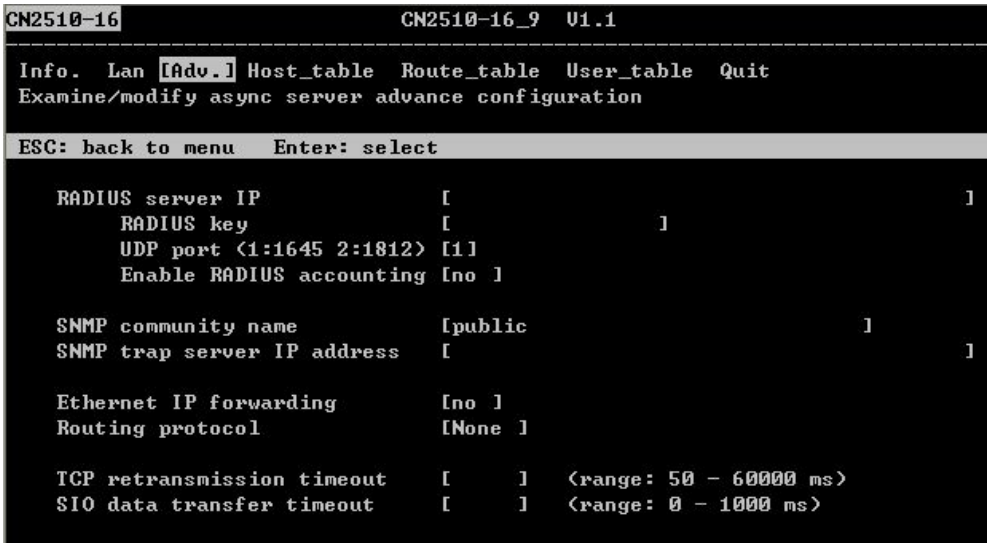
Configuring RIP

1. In the **MAIN MENU**, select **Server**.



2. In **SERVER MENU**, select **Adv**., and then press **Enter**.

3. Use the Up/Down arrow keys to move the cursor to **Routing protocol**. Press **Enter** to see the options. Select **RIP-1** or **RIP-2** for **Routing protocol**. The RIP setting is only for sending packets. For receiving packets, CN2510 supports both RIP-1 and RIP-2.



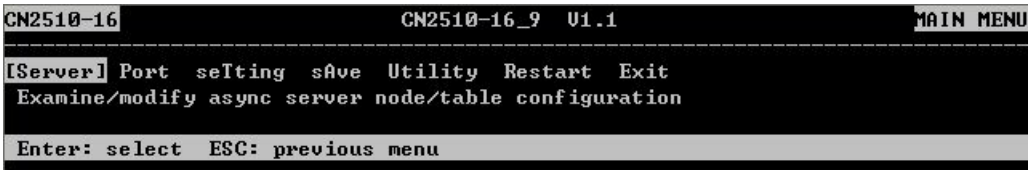
4. Press **Esc** to return to **MAIN MENU**.

Configuring Static Routing Table – SERVER [Route_table]

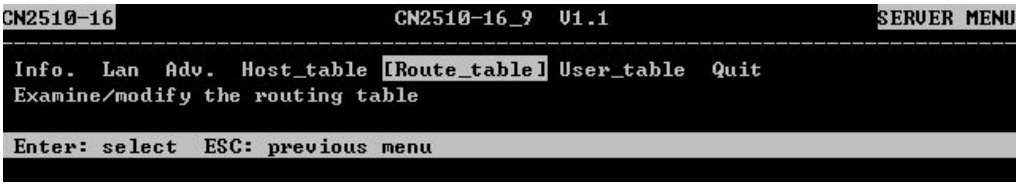
Although RIP-1 and RIP-2 periodically update routing tables between different routers, you still need to add routing entries in the routing table for routes only directed to you.

Configuring Routing Table

1. In **MAIN MENU**, select **Server**.



2. In **SERVER MENU**, select **Route_table** and then press **Enter**.



3. Use the **Tab** and arrow keys to move the cursor.

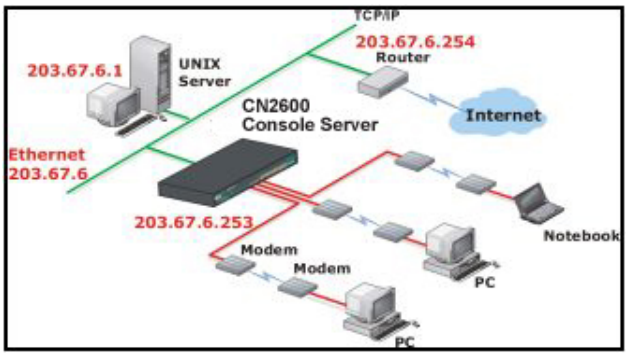
```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------
 Info.  Lan  Adv.  Host_table [Route_table] User_table  Quit
 Examine/modify the routing table

 ESC: back to menu   Enter: select

Entry   Gateway          Destination       Netmask          Metric
 01    [               ] [               ] [               ]  [01]
 02    [               ] [               ] [               ]  [01]
 03    [               ] [               ] [               ]  [01]
 04    [               ] [               ] [               ]  [01]
```

Entry: Max. of 32 entries are allowed in the table.
Gateway: IP address of next-hop router.
Destination: Host IP address or network address of the route's destination.
Netmask: Destination network's Netmask pattern.
Metric: Number of hops from source to destination. Ranges from 1 to 15.

4. Press **Esc** to return to **MAIN MENU**.

Static Routing Examples

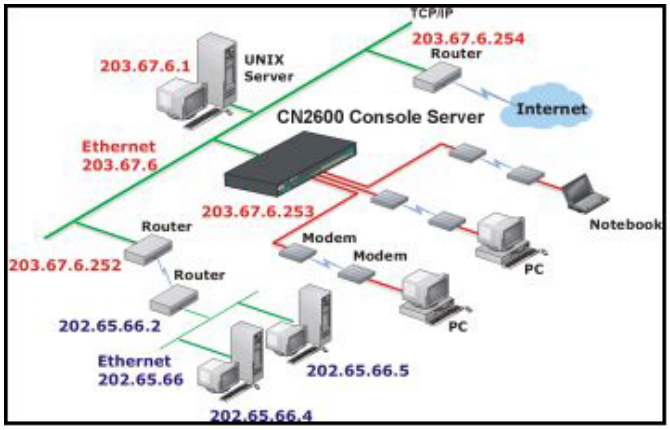
Configuring Routes to the Internet



The dial-in PC/notebook sends a request to Internet host 192.48.96.9, which is not in the local network 203.67.6. This causes CN2510 to act as a router and send the datagram to the default next-hop router 203.67.6.254. In this case we should input the default gateway IP address as 203.67.6.254 for any destination beyond the local network 203.67.6.

```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------------
 Info.  Lan  Adv.  Host_table [Route_table] User_table  Quit
 Examine/modify the routing table

 ESC: back to menu   Enter: select

Entry   Gateway           Destination       Netmask           Metric
 01    [203.67.6.254   ] [0.0.0.0        ] [0.0.0.0        ]  [01]
 02    [               ] [               ] [               ]  [01]
 03    [               ] [               ] [               ]  [01]
```

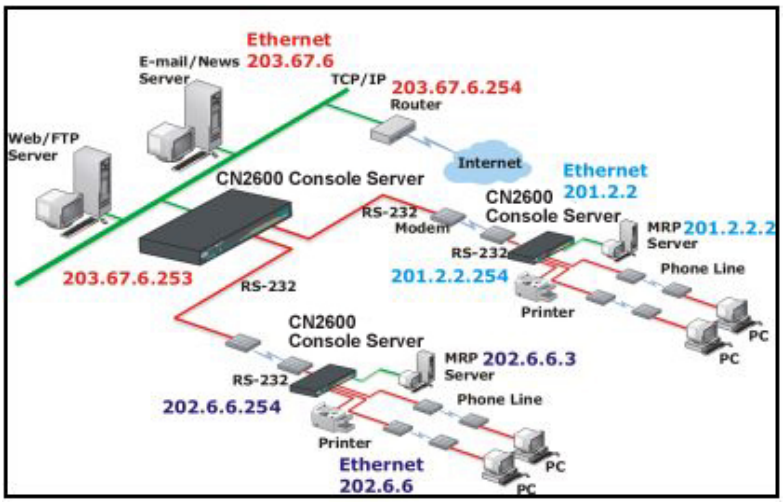
Configuring Routes to the Internet and Intranet



Besides sending requests to the Internet, dial-in users can make requests to Intranet host 202.65.66.5, which is also outside network 203.67.6, but is in 202.65.66. Add a route entry for the next-hop router, 203.67.6.252, for delivering requests to network 202.65.66. The metric hop in this case is 2 route hops.

```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------------
 Info.  Lan  Adv.  Host_table [Route_table] User_table  Quit
 Examine/modify the routing table

 ESC: back to menu   Enter: select

Entry   Gateway           Destination       Netmask           Metric
 01    [203.67.6.254   ] [0.0.0.0        ] [0.0.0.0        ]  [01]
 02    [203.67.6.252   ] [203.65.66.0    ] [255.255.255.0  ]  [02]
 03    [               ] [               ] [               ]  [01]
```

Configuring Multiple-Point Routes



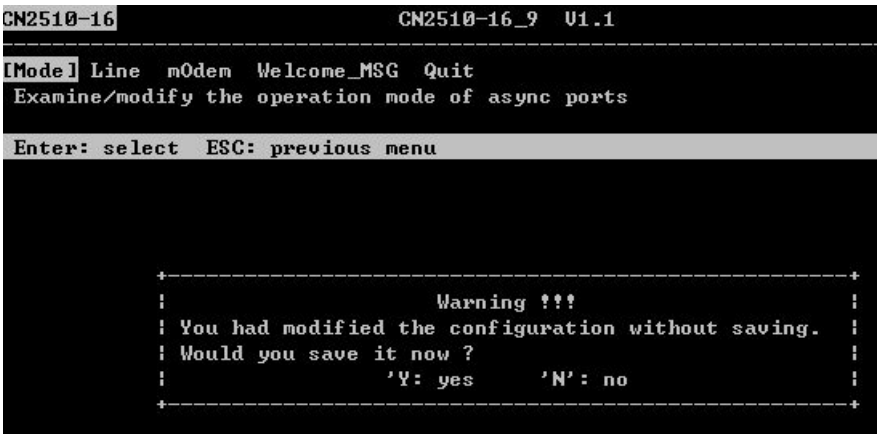
For multi-location enterprises, CN2510 can be placed in different branch offices and used as both a multi-point router and remote access server. When hosts send requests to hosts in another network, such as 202.6.6 or 201.2.2, CN2510 delivers the request to the remote end CN2510, 202.6.6.254 or 201.2.2.254, as the next-hop router. Meanwhile, requests to Internet hosts are still sent through router 203.67.6.254 as the next-hop router. For the serial port 202.6.6, the Source IP address has to be configured as 203.67.6.250. For the serial port 201.2.2, the Source IP address has to be configured as 203.67.6.249. There will be 3 routes at this time:

```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------
 Info.  Lan  Adv.  Host_table [Route_table] User_table  Quit
 Examine/modify the routing table

 ESC: back to menu   Enter: select

Entry   Gateway          Destination      Netmask          Metric
 01    [203.67.6.254 ] [0.0.0.0      ] [0.0.0.0      ]   [01]
 02    [203.67.6.252 ] [203.65.66.0  ] [255.255.255.0]   [02]
 03    [203.67.6.251 ] [201.2.2.0    ] [255.255.255.0]   [01]
 04    [             ] [             ] [             ]   [01]
```

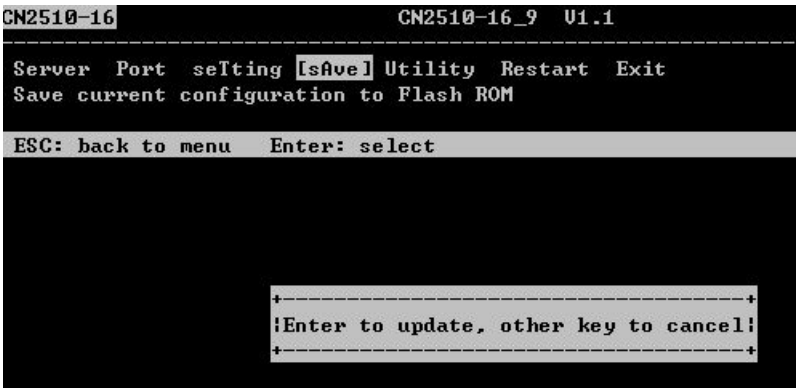
NOTE	The IP address of the remote CN2510 has to be configured in **Destination IP addr**, in **port**, **mode**, **more setting**, in **PORT MENU**.

Save

1. Press **Y** to save previous settings when exiting **PORT MENU**.

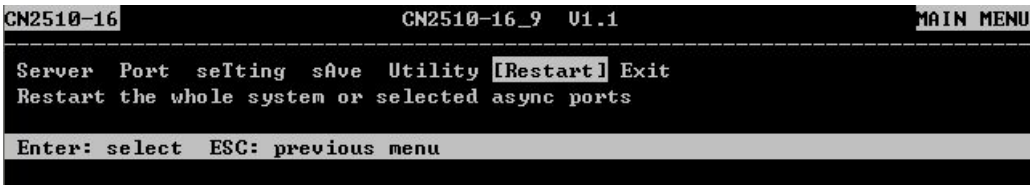


2. You may also save later. In **MAIN MENU**, select **sAve** to save all changed settings, and then press **Enter** to confirm.

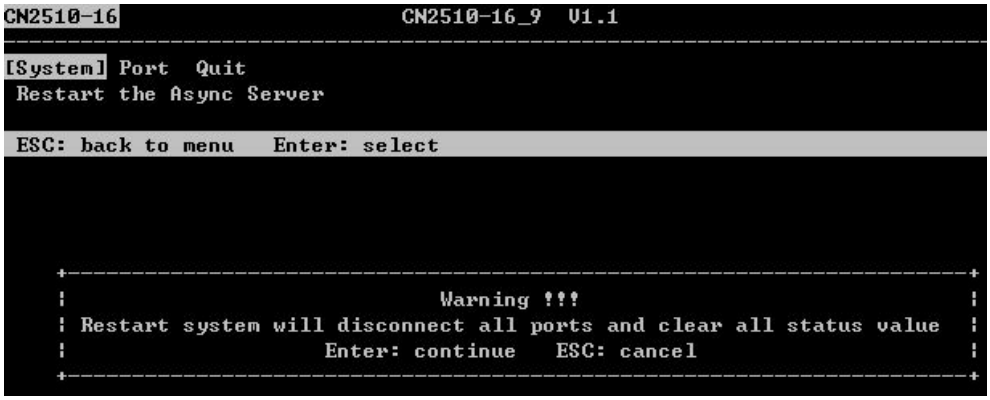


Restart

1. Return to **MAIN MENU** and select **Restart**.



2. Select **System**, and then press **Enter** to continue.



3. The system will restart and the Telnet/Console session will terminate. Enter **MAIN MENU** again to check whether the settings have been changed.

14

Administrative Utility

In this chapter we discuss using CN2510 Administration Utility, including how to use the Ping function to see if a LAN host is still active, and how to get information with Monitor/Line, Monitor/Network, Monitor/Async, Monitor/Routing, and Monitor/PPP-Trace.

The following topics are covered in this chapter:

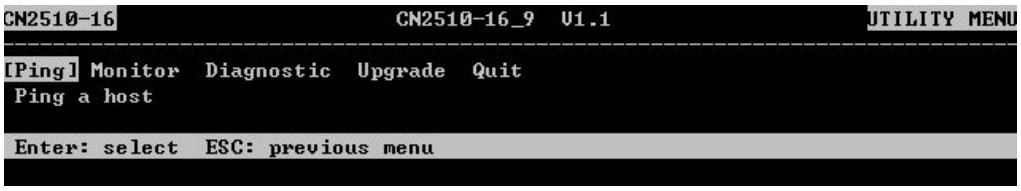
- **Utility – Ping**
- **Utility – Monitor**
  - Line
  - Network
  - Async
  - Routing
  - PPP-Trace
- **Utility – Diagnostic**
- **Utility – Upgrade**
  - Upgrade through Windows Utility
  - Console Terminal Upgrade
  - Remote RCP Upgrade
- **Setting – Export**
  - Console Terminal Export
  - Remote RCP Export
- **Setting – Import**
  - Console Terminal Import
  - Remote RCP Import
- **Setting – Default**

Utility – Ping

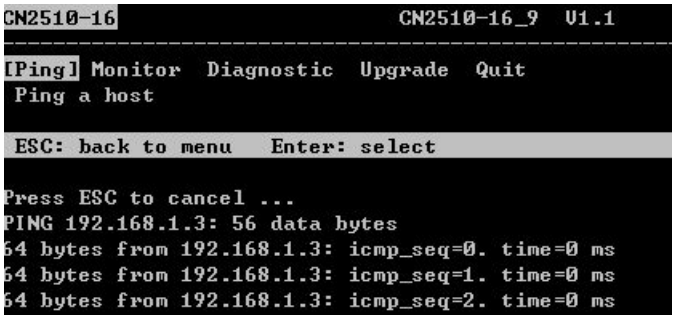
Ping is used to test network hardware connectivity and whether a network host is active.

1. To enter **Utility** in **MAIN MENU**, use arrow keys to select **Utility,** and then press **Enter**.

2. In **UTILITY MENU** select **Ping**, and then press **Enter**.



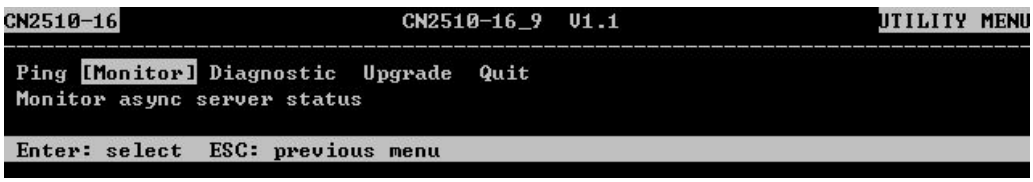
3. Enter **target host IP address**.



4. Press **Esc** to return to **Ping**.

Utility – Monitor

Monitor Utility includes serial line status, network status, serial transmission flow, routing, and PPP trace.



Line

1. In **MONITOR MENU,** select **Line**, and then press **Enter**.

```
CN2510-16                    CN2510-16_9  V1.1                    MONITOR MENU
------------------------------------------------------------------------------

[Line] Network  Async  async-Setting  Routing  PPP-Trace  Quit
 Monitor asynchronous port connective utilization

 Enter: select  ESC: previous menu
```

```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------------

[Line] Network  Async  async-Setting  Routing  PPP-Trace  Quit
 Monitor asynchronous port connective utilization

 ESC: back to menu   Enter: select

Port Type     Idle  Status
 01  PPP      39Sec negotiation
 02  TERM_BIN 39Sec select protocol
 03  RTELNET  39Sec listen
 04  ASPP     39Sec listen
 05  TERM_BIN 39Sec select protocol
 06  RAW PRN  39Sec listen
 07  FIXTTY   39Sec #S1:listen S2:listen
 08  ASPP     39Sec listen
 09  RAW UDP  39Sec data transfer
```

Type - Port operation mode set in **Mode** in **PORT MENU**
Idle - Idle time for this port
Status -Current status of the port. (If a host is connected to this port, then the host's IP address is displayed in this column.)

2. Press **Esc** to return to **Line**.

Network

1. In **MONITOR MENU,** select **Network,** and then press **Enter**.

```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------------

 Line [Network] Async  async-Setting  Routing  PPP-Trace  Quit
 Monitor Network protocol status

 ESC: back to menu   Enter: select

ETHERNET:  Received  636                                Sent      106
PPP:       Received  0                                  Sent      27
           RDiscard  0           ErrSum    0            SDiscard  0
IP:        Received  209                                Sent      104
           RDiscard  0           SNoRoute  0            SDiscard  0
           ErrHeader 0           ErrProto  0            ErrAddr   0
ICMP:      Received  9                                  Sent      0
           REchoReq  0                                  SEchoReq  0
           REchoRply 0                                  SEchoRply 0
UDP:       Received  4                                  Sent      18
           ErrHeader 0           ErrPorts  0
TCP:       Received  55                                 Sent      86
           ErrHeader 0           ErrPorts  0            ReSent    1
           CurrEstab 1           Opens     0
```

Ethernet statistics
Received: Total packets of input datagram received from the Ethernet.
Sent: Total packets of output datagram delivered to the Ethernet.

PPP statistics
Received: Received PPP datagram packets.
RDiscard: Received but discarded PPP datagram packets.
ErrSum: Checksum error packets.
Sent: Sent PPP datagram packets.
SDiscard: Sent but discarded PPP datagram packets.

IP statistics
Received: Received IP datagram packets.
RDiscard: Received but discarded PPP datagram packets.
ErrHeader: Received but discarded datagram packets due to errors in IP headers.
SNoRoute: Received IP datagram packets for wrong route.
ErrProto: Locally addressed datagram packet received successfully but discarded for not matching one of TCP, UDP, ICMP protocols offered by CN2500.
Sent: Sent IP datagram packets.
SDiscard: Sent but discarded IP datagram packets.
ErrAddr: Sent datagram packet discarded for invalid destination IP address.

ICMP statistics
Received: Received packets of ICMP messages.
Sent: Sent packets of ICMP messages.
REchoReq: Received packets from remote Ping request.
REchoRply: Responding packets to remote Ping request.
SEchoReq: Received packets from local ping request.
SEchoRply: Responding packets to local ping request.

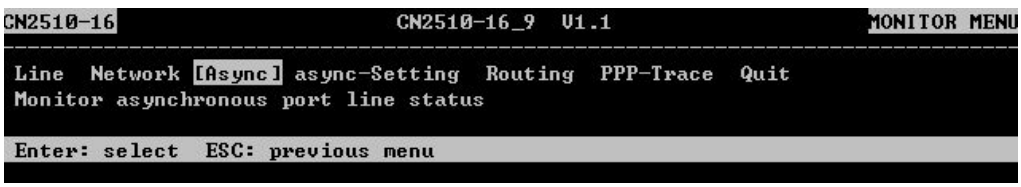
UDP statistics
Received: Received UDP datagram packets.
ErrPorts: Received UDP datagram packets with invalid destination port.
ErrHeader: Received UDP datagram packet with incorrect header.
Sent: Sent UDP datagram packets.

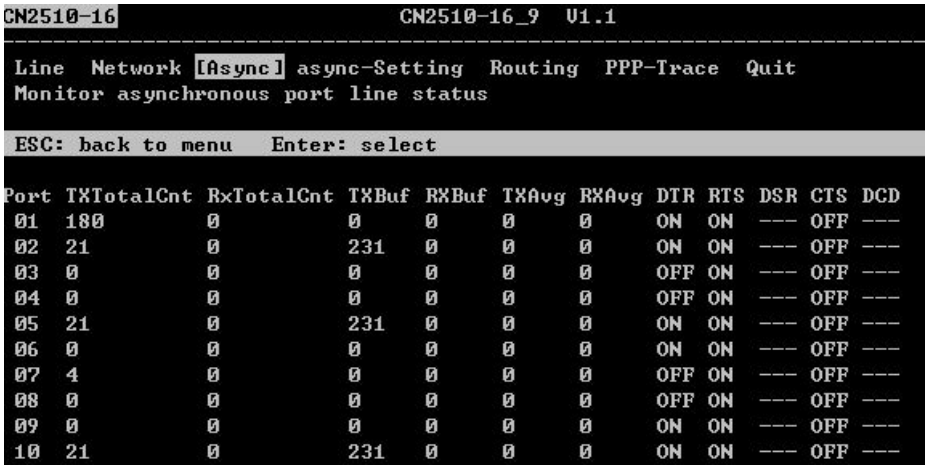
TCP statistics
Received: Total received packets of segments, including error packets.
ErrHeader: Error packets (e.g., bad TCP checksums).
CurrEstab: The counter of TCP connections for which the current state is either ESTABLISHED or CLOSE-WAIT.
Errorport: Received TCP datagram packets with invalid destination port.
Opens: TCP connections.
Sent: Total sent packets, including those on current connections.
ReSent: Retransmitted packets.

2. Press **Esc** to return to **Network**.

Async

1. In **MONITOR MENU,** select **Async**, and then press **Enter**.



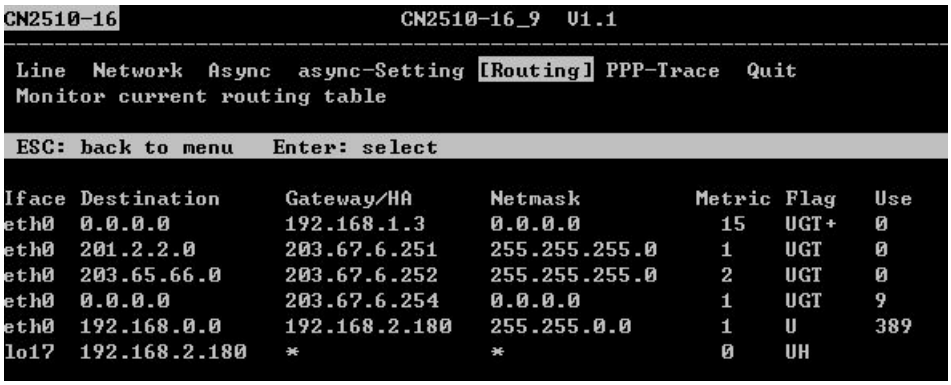


TXTotalCnt: Total transmitted characters.
RXTotalCnt: Total received characters.
TXBuf: Queued data bytes in the transmit raw buffer.
RXBuf: Received data bytes in the receiving raw buffer.
TXAvg: Current approx. characters per second transmit rate.
RXAvg: Current approx. characters per second receiving rate.
DTR: Current DTR status.
RTS: Current RTS status.
DSR: Current DSR status
CTS: Current CTS status.
DCD: Current DCD status.

2. Press **Esc** to return to **Async**.

Routing

1. In **MONITOR MENU,** select **Routing**, and then press **Enter**.



Iface: Name of the physical network interface.
Destination: Network or host that the router allows you to connect to.
Gateway: IP Address of the gateway you configured for this route. If you are directly connected, this is a local address. Otherwise, it is the address of the machine through which packets must be routed.
Netmask: Network pattern of the gateway.
Metric: Number of hops to the destination.

Flags: State of the route. Valid states are:

U	up
D	down
G	route to a gateway
H	route to a host
T	setting in route table
R	dynamic by RIP

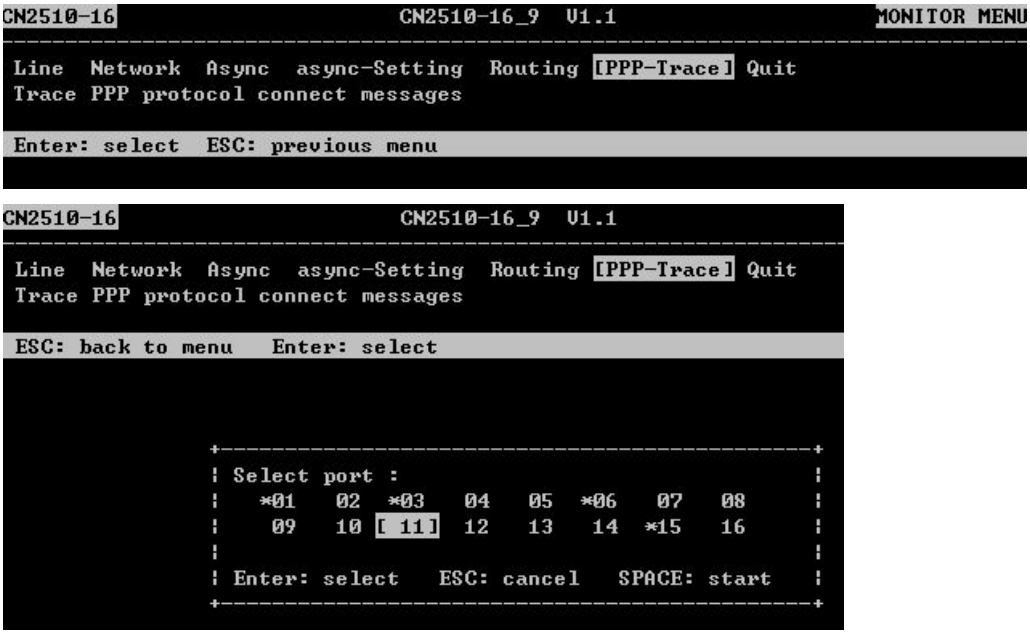
Use: Correct number of packets being sent in this route.

2. Press **Esc** to return to **Routing**.

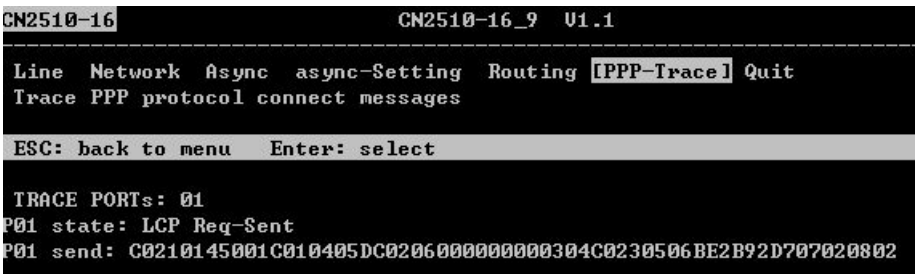
PPP-Trace

1. In **MONITOR MENU,** select **PPP-Trace**, and then press **Enter**.

2. Use the arrow keys to select the port you wish to trace, and then press **Enter** to select.



3. After selecting the ports that need monitoring, press **Space** to start.



PPP states for the selected ports are shown. LCP (Link Control Protocol), which is an essential part of the PPP link, is used for establishing, configuring, and testing the data link connection.

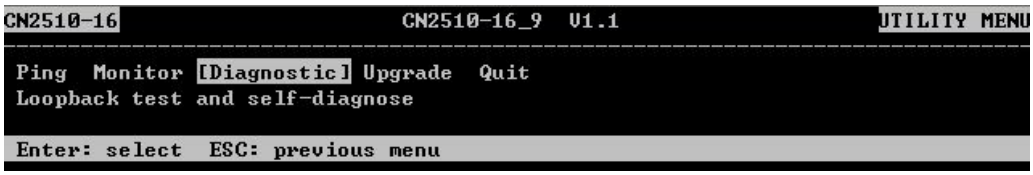
4. Press **Esc** to return to **PPP-Trace**.

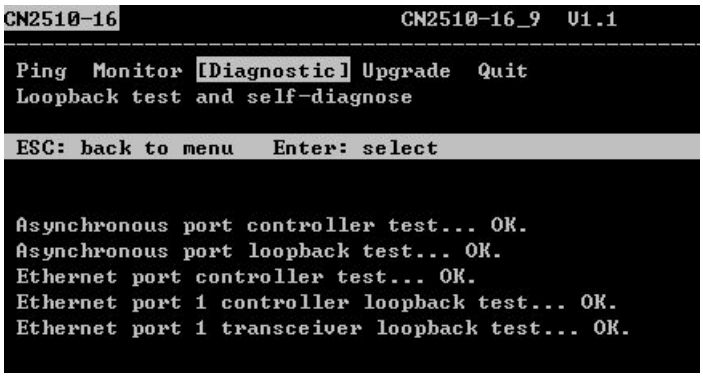
Utility – Diagnostic

CN2510 Diagnostic Utility, which is used to test async ports, Ethernet controllers, and printer ports, contains the following functions.

- Async ports controller and internal loop-back test.
- Ethernet controller, internal and external loop-back test.
- Printer port test.

1. In the **UTILITY** menu, use the arrow keys to select **Diagnostic**, and then press **Enter**.





If any of these tests fail, contact Moxa to request repair services.

2. Press **Esc** to restart the system.

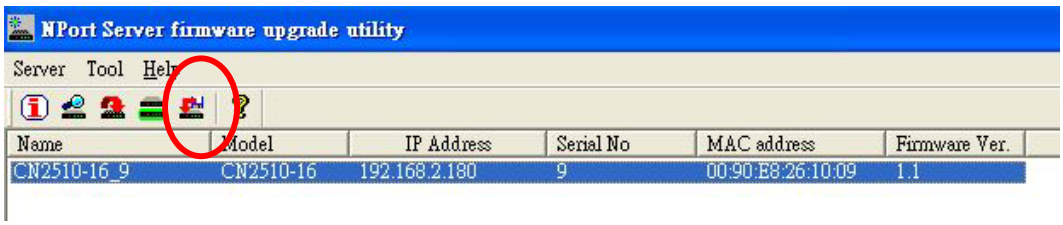
Utility – Upgrade

The operating system in CN2510 is kept in the Flash ROM. It can be upgraded using Windows Utility, from a locally connected CONSOLE Terminal using XMODEM protocol, or from a Unix host using RCP protocol.

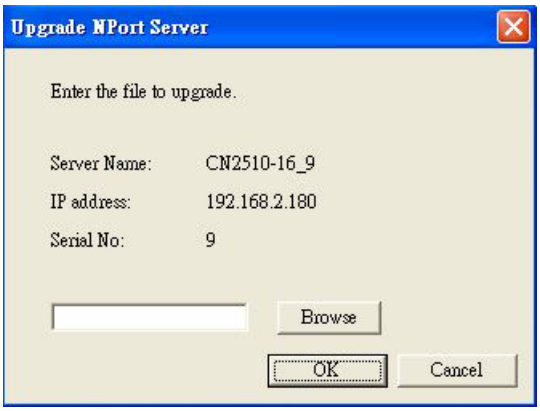
Upgrade through Windows Utility

A major function of Windows Utility is to upgrade firmware. It is simple to use when CN2510 is connected to a Windows network environment.

1. Run `Upgrade.exe` from the CN2510 CD.

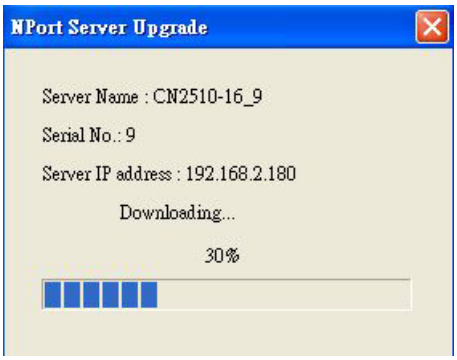


2. Select the CN2510 server by clicking the  button on the toolbar. If the CN2510 server is at a remote site, use  to add it to the list.



3. Specify the new firmware file used to upgrade.

4. Press **OK** to start.

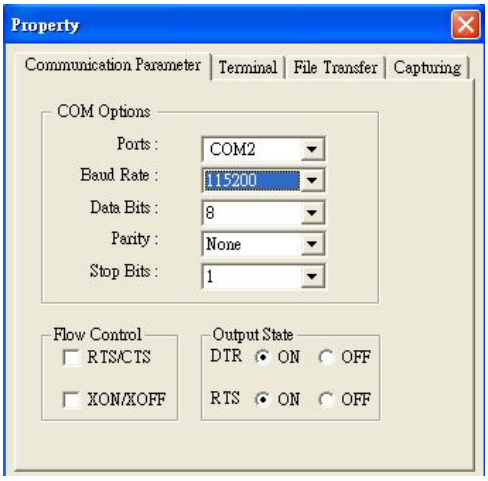


Console Terminal Upgrade

1. Run Start→Programs→PComm Terminal Emulator. (If you cannot find the software, install the PComm Lite file from the CN2510 CD, and then run the program.)

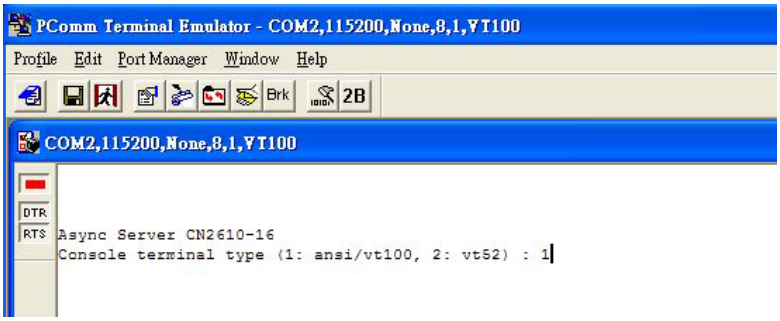
2. Use an RJ45-DB9 female cable to properly connect to the console port, and then turn on CN2510. Start the program PComm Terminal and then open a new connection.

3. In Communication Parameter select COM2 for Ports, 115200 for Baud Rate, 8 for Data Bits, None for Parity, and 1 for Stop Bits.



4. In Terminal, select VT100 for Terminal Type, and then press Enter to confirm.

5. Type 1 to choose ansi/VT100 terminal type, and then press Enter to enter MAIN MENU.

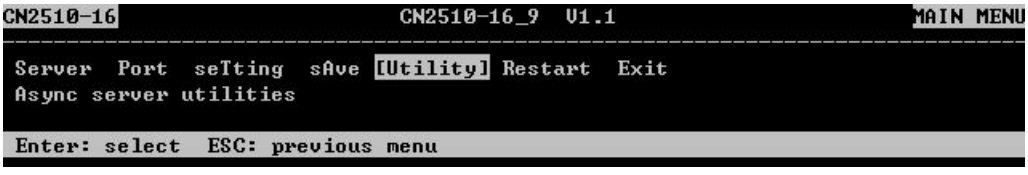


6. Below we show CN2510's MAIN MENU. Familiarize yourself with the cursor movement functions before we start.

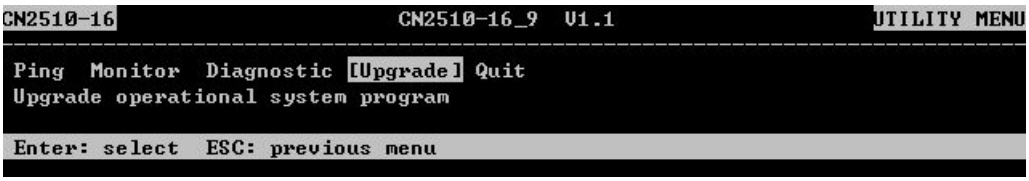
	Key
Move	**[Up/Down/Left/Right]** Arrow Key or **[Tab]** Key
Enter to next menu	**[Enter]** Key
Back to previous menu	**[Esc]** Key
Fast Key	**Capital** letter of the word

Upgrade through Serial Console

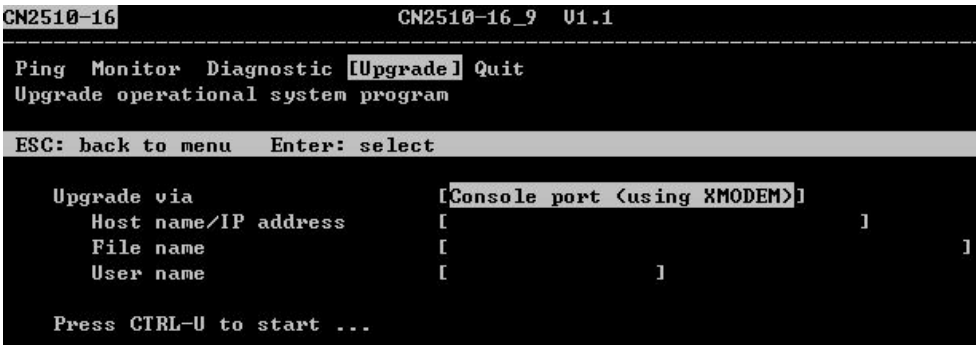
1. In MAIN MENU select Utility, and then press Enter.



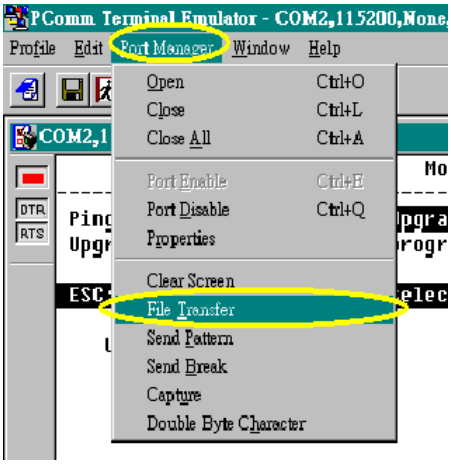
2. In UTILITY MENU, select Upgrade, and then press Enter.



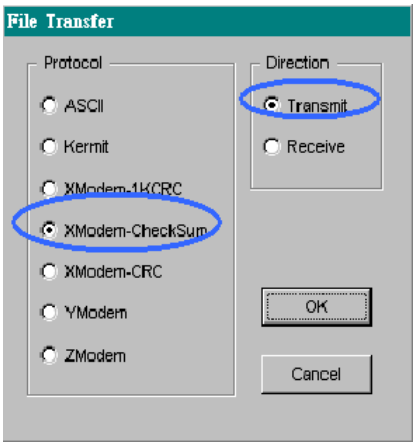
3. Select Console port (using XMODEM) for Upgrade type, and then press Ctrl-U to start.



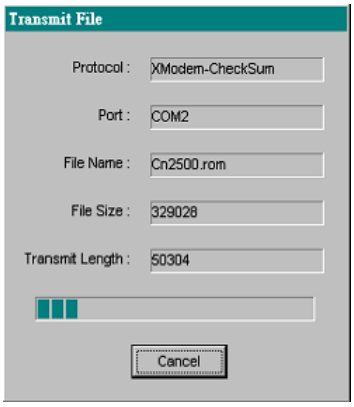
4. You will need to specify the file used for upgrading. Select Port Manager→File Transfer from the menu.



5. In the File Transfer window select XModem-CheckSum for Protocol and Transmit for Direction, and then click on OK, resulting in the file being sent to CN2510.



6. Locate the upgrade file, CN2510.rom for example. The specified file will then be transferred from the terminal to the CN2510.



7. CN2510 stores the new firmware in its Flash ROM, and then restarts the entire system. This completes the Upgrade process.

Remote RCP Upgrade

RCP (Remote Copy Program) is the Unix utility for copying files over the Ethernet. RCP allows transparent copying of files between hosts, without the need to enter passwords. This can be done using the security file `.rhosts`.

NOTE

The format of RCP is as follows: *`rcp from to`*
The *`from`* and *`to`* arguments can either be specified as local files or remote files. To specify a remote file, use the format: *`user@hostname:filename`*. If the remote login ID is identical to the local login ID, then *`user@`* can be omitted (i.e., only *`hostname:filename`* is required*)*.

NOTE

The security file *`.rhosts`* is a plain text file that must reside in the local user's home directory, and must be owned by that user. This file identifies those users who are "equivalent" to the local user, and are given access without needing to enter a password.

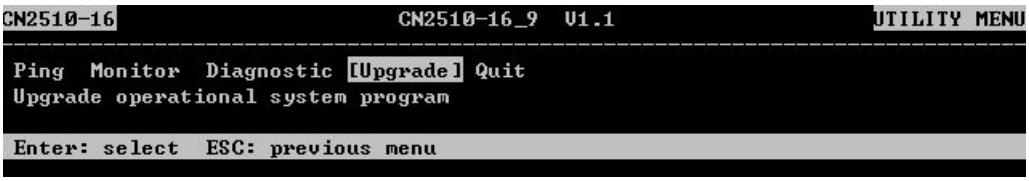
NOTE

The file must contain at least a host, and if the login ID is different on the remote host, the login ID as well. This sample *`.rhosts`* file is for the user *`john`* on the host *`sun`*. The following three accounts are considered "equivalent" accounts. The user has accounts on *`moxa1`* and *`moxa3`* with the same login ID, and has an account on *`moxa2`* as *`johnwu`*.

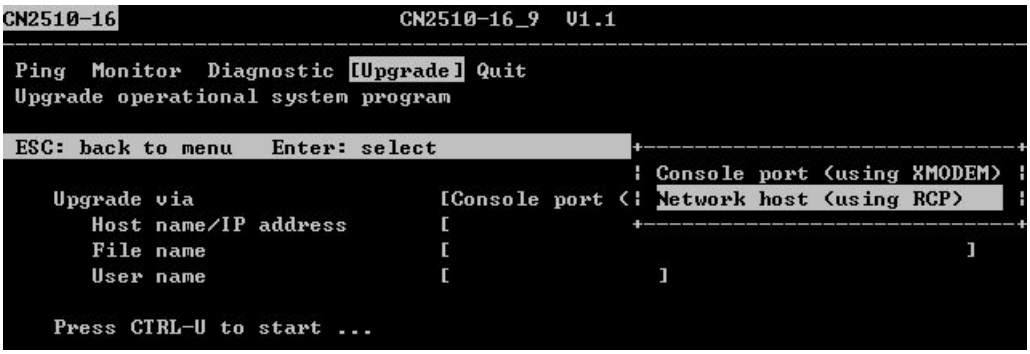
```
# This comment line is ignored by the operating system.
Moxa1.com.tw john
Moxa2.com.tw johnwu
Moxa3.com.tw john.
```

1. Login to your UNIX/LINUX host. For example, login to 203.67.8.22 as user "john".
2. Copy CN2510 firmware, e.g., "CN2510.rom", into the current directory.
3. Create a file named `.rhosts` in this directory. Enter CN2510's IP address**,** e.g., 192.168.205.21, in the `.rhosts` file, or enter CN2510's domain name if it's defined in your `/etc/hosts` file.
4. Telnet CN2510's IP address.

5. After entering CN2510's **MAIN MENU**, select **Utility→Upgrade**.



6. In the **Upgrade via** column, select **Network host (using RCP)**.



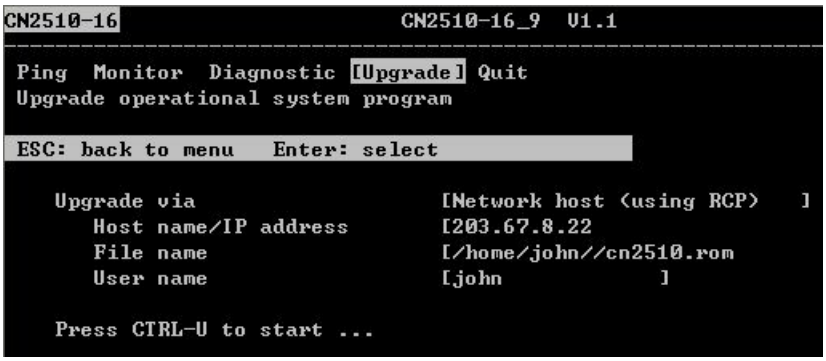
7. In **Host name/IP address,** enter the IP address of the UNIX/LINUX host.

8. In **File name**, enter the CN2510 firmware file name in the UNIX/LINUX host.

9. In **User name,** enter the user name for logging into the UNIX/LINUX host.

10. Press **CTRL-U** to start.

11. After downloading, CN2510 will restart the system.



Setting – Export

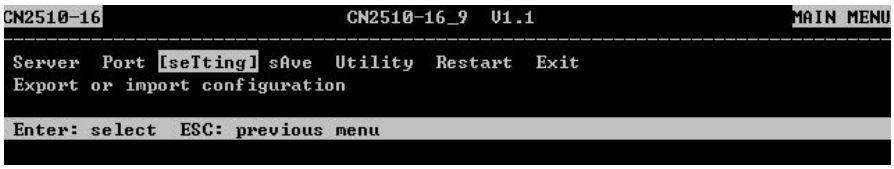
Settings can be exported to a file as a backup, or to be used by another CN2510 with the same settings. There are two types of exported file settings, console terminal or remote RCP.

Console Terminal Export

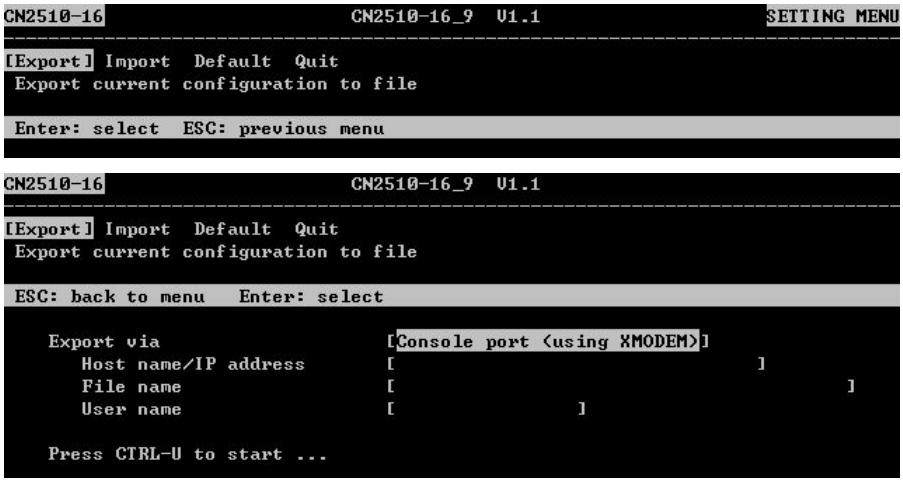
1. To enter Setting in MAIN MENU, use the arrow keys to select seTting, and then press Enter.

2. Run Start→Programs→PComm Terminal Emulator. Follow the steps earlier to enter MAIN MENU.

3. In MAIN MENU select seTting, and then press Enter.

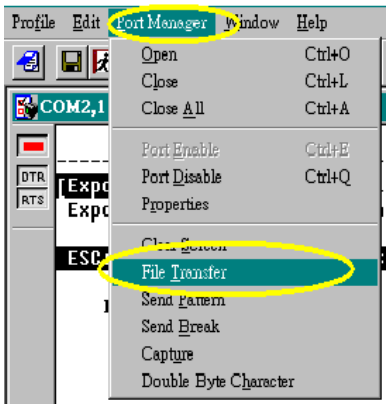


4. In the SETTING MENU select Export, and then press Enter.

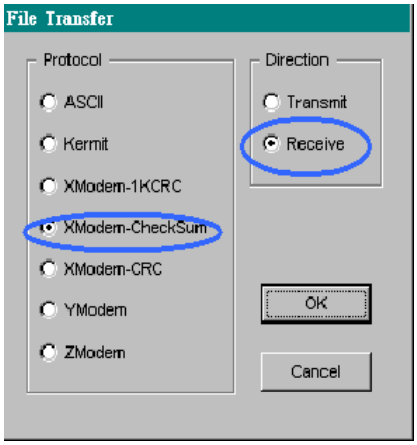


5. Select Console port (using XMODEM) for upgrade type, and then press [Ctrl-U] to start.

6. You will need to specify the file used for upgrading. Select Port Manager→File Transfer from the menu.



7. In the File Transfer window select XModem-CheckSum for Protocol, and Receive for Direction. Selecting OK causes the terminal to receive settings from CN2510.

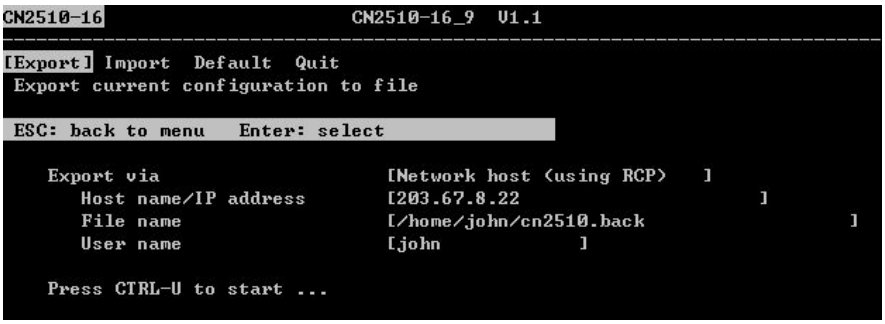


8. Choose the backup filename, CN2510.back for example. CN2510 will then export settings to the file. Press any key to continue.

Remote RCP Export

As we pointed out earlier, RCP is a file transfer protocol that does not require a password.

1. Login to your UNIX/LINUX host. For example, login to 203.67.8.22 as user john.
2. Create a file named .rhosts in this directory. Enter CN2510's IP address, e.g., 192.168.205.21, or CN2510's domain name (if it's defined in your /etc/hosts file), in the .rhosts file.
3. Telnet CN2510's IP address.
4. After entering CN2510's MAIN MENU, select seTting→Export.
5. In the Emport via column, select Network host (using RCP).
6. Enter the UNIX/LINUX host's IP address for Host name/IP address.
7. Enter CN2510's firmware file name on the UNIX/LINUX host for File name.
8. Enter the user name required to login to the UNIX/LINUX host for User name.
9. Press CTRL-U to start.



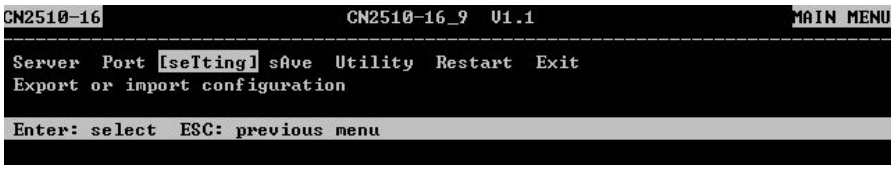
Setting – Import

Saved settings can be imported back to CN2510. There are two settings to choose from for importing from a file, console terminal or remote RCP.

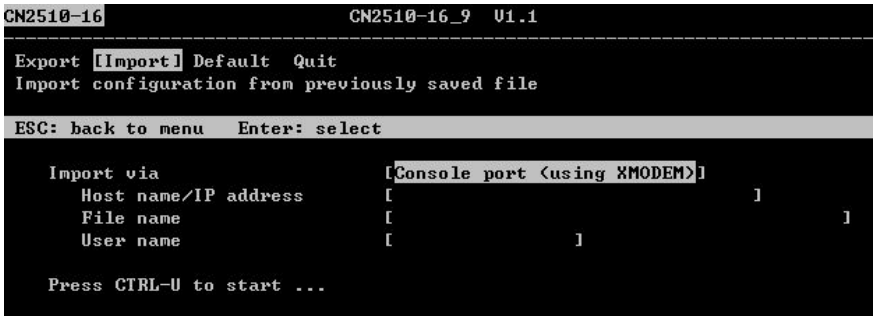
Console Terminal Import

1. Run Start→Programs→PComm Terminal Emulator. Follow the steps earlier to enter MAIN MENU.

2. In MAIN MENU select seTting, and then press Enter.

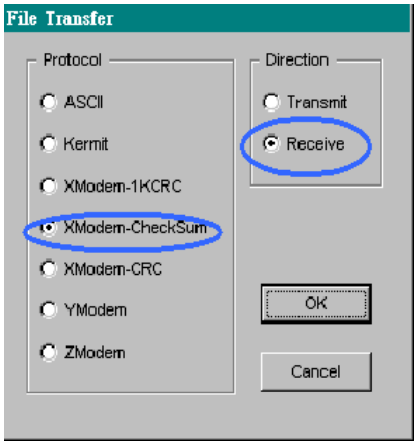


3. In SETTING MENU select Import, and then press Enter.



4. Select Console port (using XMODEM) for upgrade type and then press Ctrl-U to start.

5. In the File Transfer window select XModem-CheckSum for Protocol and Transmit for Direction. This causes the file to be sent from the terminal to CN2510. Click OK.

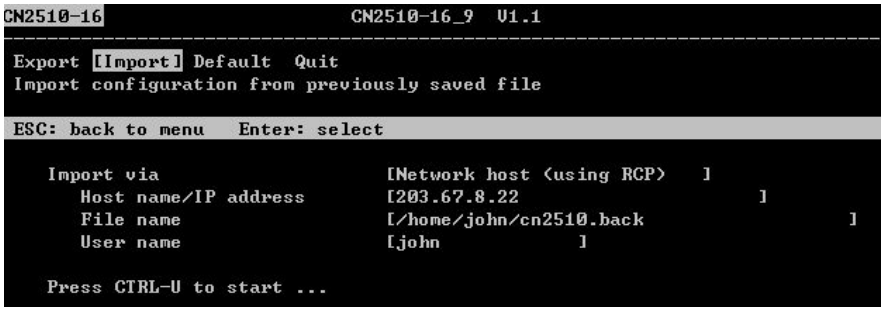


6. Locate the setting file, CN2510.back for example. CN2510 receives settings to this file. Press any key to continue.

Remote RCP Import

As we pointed out earlier, RCP is a file transfer protocol not requiring a password.

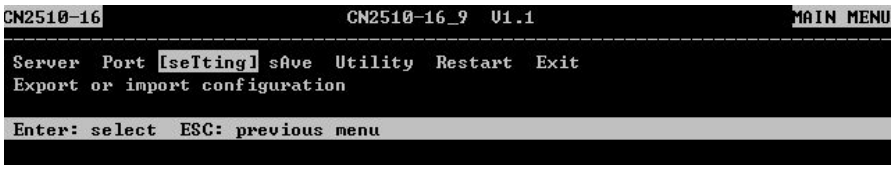
1. Login to your UNIX/LINUX host. For example, login to 203.67.8.22 as user john.
2. Create a file named .rhosts in this directory. Enter CN2510's IP address, e.g., 192.168.205.21, or CN2510's domain name (if it's defined in your /etc/hosts file), in the .rhosts file.
3. Telnet CN2510's IP address.
4. After accessing CN2510 MAIN MENU, select seTting→Import. In Upgrade via column, select Network host (using RCP).
5. Enter the UNIX/LINUX host's IP address for Host name/IP address.
6. Enter CN2510's firmware file name on the UNIX/LINUX host for File name.
7. Enter the user name required to login to the UNIX/LINUX host for User name.
8. Press CTRL-U to start.



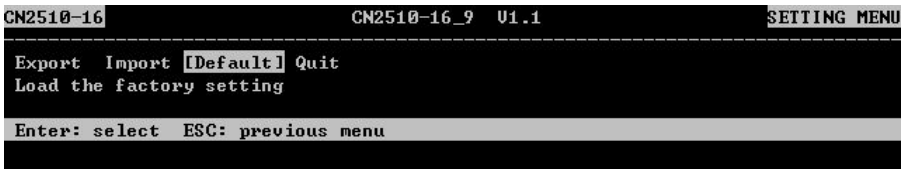
Default

CN2510 can restore default settings if necessary. Note that the IP address will not be changed to default.

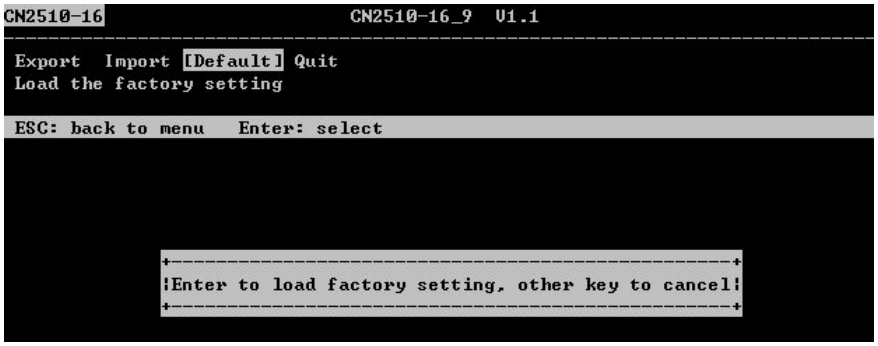
1. In MAIN MENU select seTting, and then press Enter.



2. In SETTING MENU select Default, and then press Enter.



3. Press Enter to confirm that you wish to erase all settings and restore the default settings. Press any key to cancel.



A

Trouble Shooting

- **Console Terminal Problems**
- **Terminal Port Problems**
- **How to Save CN2510's Parameters**
- **ASPP Port Problems**
- **SLIP/PPP Connection Problems**
- **RAIDUS Problems**

Console Terminal Problems

Q: No message displayed on the console terminal.

Solutions:

- Check to see if the terminal is set to 115200 bps, 8 data bits, no parity, 1 stop bit.
- Check to see if the RS-232 cable is wired correctly. The console needs CTS/DCD signals to trigger. Refer to Cable Wiring in Appendix D.
- The console may be blocked waiting for an event. Press ESC to try unblocking.

Q: Garbage characters displayed on console terminal.

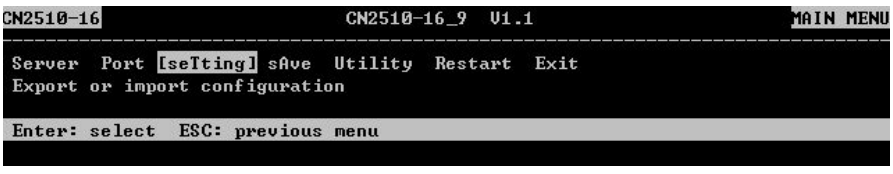
Solutions:

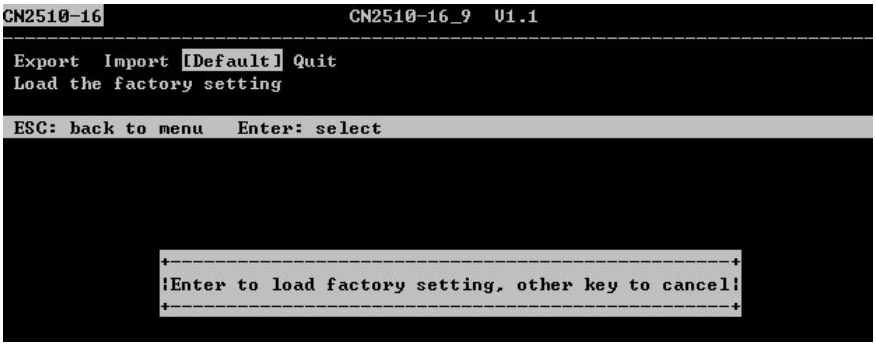
- Check to see if the terminal is set to 115200 bps, 8 data bits, no parity, 1 stop bit.
- Check to see if terminal type setting is correct. The console only accepts ansi/vt100 or vt52.
- Press Ctrl-L to refresh the display.

Q: How can I restore CN2510 to the factory default settings?

Solutions:

- After entering Console window, select setting→Default, and then press Enter. The CN2510 will be restored to the factory default settings.





Q: If I forget the password for my CN2510, what should I do?

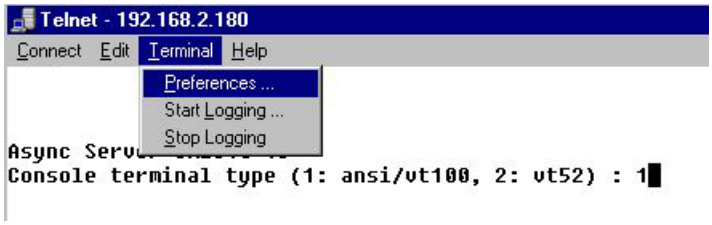
Solutions:

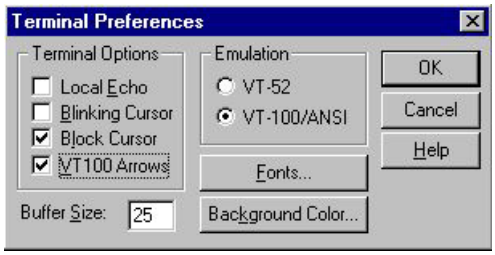
- Press the "Password Reset button" on the CN2510's front panel for more than 3 seconds. The password stored in the Flash ROM will be erased. Refer to chapter 1 for more details.

Q: I used Telnet Console in a Windows 9x/NT environment, but I couldn't use the arrow keys to select options, what should I do?

Solutions:

- In Telnet, click on the **Terminal** menu, choose **Preferences**, and then select **VT100 Arrows** in the **Terminal Preferences** window. Click on **OK** to go back to the **MAIN MENU**, and then it can work properly now.





Terminal Port Problems

Q: When a terminal is connected to one of CN2510's serial ports, o message is displayed on the terminal attached to the CN2510 terminal port when powered on.

Solutions:

- One of the possible reasons is that this serial port is configured to **Disable** mode, or to other application mode. Use Serial Console or Telnet Console, select **Port → Mode**, and then move the cursor to the **Application** corresponding to the serial port, and change **Disable** to **Terminal**.
- Check to see if the terminal's serial port is set to the same settings as CN2510's serial port. Use Serial Console or Telnet Console, select **Port → Line**, and then move the cursor to the corresponding serial port, and check to see if **Speed, Bits, Stop, Parity, FIFO, RTS/CTS, XON/XOFF**, and **Discon.ctrl** settings are the same with the terminal's serial port.
- Check to see if the RS-232 cable is wired correctly. If the port is utilizing the RTS/CTS hardware flow control, then the RTS, CTS pins should be included. In this case, a cable with only TxD, RxD, and GND pins is not allowed.
- The terminal may be unlocked by pressing **[Ctrl-S] (Hex Code 0x13)** if software flow control is used. Press **[Ctrl-Q] (Hex Code 0x11)** to relieve it.

How to Save CN2510's Parameters

Q: How can I save CN2510's parameters to avoid unexpected power failure, or to transfer the same parameters to another CN2510?

Solutions:

- After entering Console's screen, select **seTting → Export**, and press **Enter**. Then you can use **XMODEM** in a Windows host, or **RCP** in a UNIX host to save the parameters in a file.

```
CN2510-16                    CN2510-16_9  V1.1                          MAIN MENU
------------------------------------------------------------------------------
Server  Port [seTting] sAve  Utility  Restart  Exit
Export or import configuration

 Enter: select  ESC: previous menu
```

```
CN2510-16                    CN2510-16_9  V1.1                        SETTING MENU
------------------------------------------------------------------------------
[Export] Import  Default  Quit
 Export current configuration to file

 Enter: select  ESC: previous menu
```

```
CN2510-16                    CN2510-16_9  V1.1
------------------------------------------------------------------------------
[Export] Import  Default  Quit
 Export current configuration to file

 ESC: back to menu   Enter: select

   Export via                 [Console port (using XMODEM)]
     Host name/IP address     [                                ]
     File name                [                                ]
     User name                [               ]

   Press CTRL-U to start ...
```

ASPP Port Problems

Q: The application utilizing the ASPP subroutines could not connect to the CN2510.

Solutions:

- Check to see if the target port's mode is set to ASPP. The connection will fail if the port mode is set to something other than ASPP. After entering Console's screen, select **Port → Mode**, and move the cursor to the **Application** corresponding to the serial port, and set it to **Device Control**; In **Mod**e column, set it to **ASPP**.
- Moxa provides example programs on the website for you to download: www.moxa.com

SLIP/PPP Connection Problems

Q: Cannot make a SLIP connection to a remote host.

Solutions:

- Check to see if the CN2510's SLIP port baud rate (in the **[Port][Line]** menu) is the same as the remote host's baud rate.
- Check to see if data bits= 8.
- Check to see if the XON/XOFF flow control is the same as the remote site.
- Check to see if the RS-232 cable is wired correctly. If the port is utilizing RTS/CTS hardware flow control, then the RTS, CTS pins should be included. In this case, cables with only pins 2, 3, and 7 are not allowed.
- Make sure there is no "getty" or other process using the SLIP port on the remote site.

RADIUS Problems

Q: What can I do if there is an authentication check failure in the radius server?

Solutions:

- Check to see if the console password is the same as the radius server's radius key.
- Make sure the password was entered correctly.
- Make sure the account and password in login script are correct.
- If authentication check runs for a long time and then times out, check whether RADIUS Server's IP is correct or not. Ex: Set up one port as Rtelnet, telnet CN2510's TCP port from radius, and in the meantime telnet CN2510's console and Monitor {line} status. Check to see if the remote IP address matches the radius IP address you set in CN2510.

Q: Why can't I compile radius software on a system running Linux Red hat 5.0?

Solutions:

Take the following steps if you compiled RADIUS2.3 on Red hat 5.0 or above:

1. Save makefile-SCO as a file named makefile-LINUX, and then modify the content as follows:

```
#
# make file for LINUX
#

LIBS = -lcrypt
include Makefile
```

2. Add two similar line to the shell program "mk_radius" at read_os "1". For example, they might appear as follows:

```
read_os
case $ans in
'1')
clear
mk_src
echo "enter lib directory"
cd lib
echo "compiling source program ...."
make
cd ..
echo "linking program ....."
make -f Makefile-LINUX;;
```

B

RADIUS Server

Managing dispersed serial lines and modem pools for large numbers of users can create the need for significant administrative support. Since modem pools are a link to the outside world, they require careful attention to security, authorization, and accounting. This can best be achieved by managing a single "database" of users, allowing for authentication (verifying user name and password) as well as configuring information which details the type of service to deliver to the user (for example: SLIP, PPP, telnet, rlogin). Moxa CN2510 Async Server supports RADIUS protocol, which requires only one database for remote user management

- **What is RADIUS?**
- **Setting up CN2510**
- **Setting up UXIX Hosts**
- **Setting up Windows NT Hosts**
- **Setting up Windows 2000 Hosts**
- **Setting up Windows 2003 Hosts**

What is RADIUS?

Definition

Remote Authentication Dial-up User Service, or RADIUS, is the standard for centralizing the authentication, authorization, and accounting of remote access users.

Here is a brief description of how RADIUS works: When a user dials in to a remote access device, that device communicates with the central RADIUS server to determine if the user is authorized to connect to the LAN. The RADIUS server performs the authentication and responds with the result – either accept or reject. If the user is accepted, the remote access server routes the user onto the network; if not, the RAS will terminate the user's connection. The RADIUS server also provides accounting services if supported by the remote access server.

With RADIUS, a network manager or ISP only needs to maintain a single, central database against which all remote user authentication takes place. This greatly eases the management burden associated with administering large numbers of Dial-in users.

Client/Server Architecture

RADIUS is a type of client-server software. Communication servers, such as CN2510, play an active role, whereas a RADIUS server is passive.

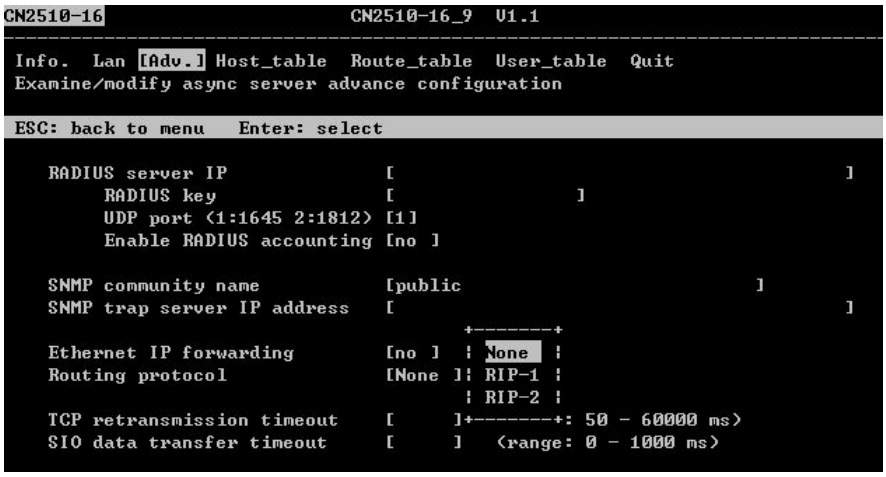
1. When a remote host is connected to CN2510, it is prompted to enter its user ID and password.
2. After receiving the user ID and password, CN2510 sends the information to a defined RADIUS server. Up to this point, the remote user is still unable to access the network.
3. The RADIUS server compares the user ID and password with its internal database, and then uses the internet to respond, either accepting or rejecting.
4. If CN2510 receives the "accept" message from the RADIUS server, the remote user is allowed to enter the network. Otherwise, CN2510 will wait for another try, or terminate the connection when a specified time limit has been reached.

Setting up CN2510

Setting up the RADIUS Server IP Address

1. In **MAIN MENU**, select **Server.**

2. In **SERVER MENU**, select **Adv**.



3. RADIUS settings.

   RADIUS server IP: [RADIUS server IP address]

   RADIUS key: [RADIUS password] (must be the same in the RADIUS server)

   UDP port: [1/2]

   Mode 1: An earlier but rather common setting is 1645. If you choose 1645, the authentication has to be set as 1645, and accounting as 1646 in the RADIUS Server.

   Mode 2: The latest setting is 1812. If you choose 1812, the authentication must be set as 1812, and accounting as 1813 in the RADIUS Server.

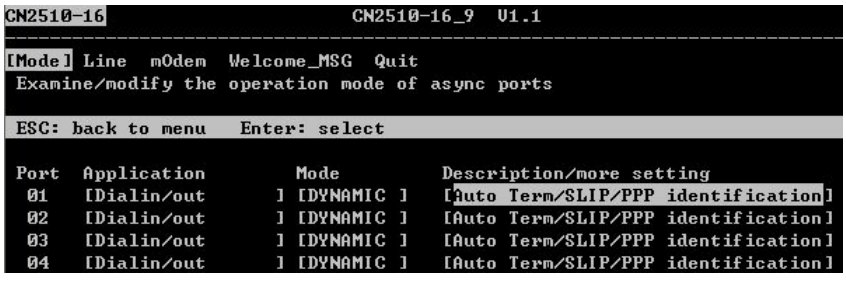
   Enable RADIUS accounting: [yes/no]

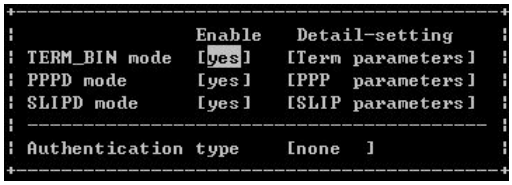
4. Save, and then restart CN2510.

Setting up Port Configuration

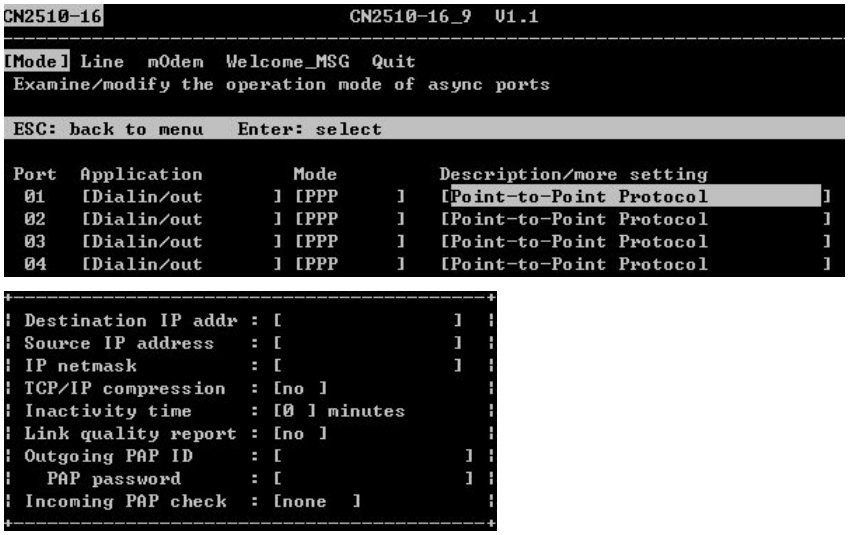
RADIUS is effective for dial-up services. Apart from dial-in services (PPP, SLIP, Dynamic), it also supports RADIUS settings in Terminal application, as well as Console Management application.

Dial-in/out – Dynamic Mode

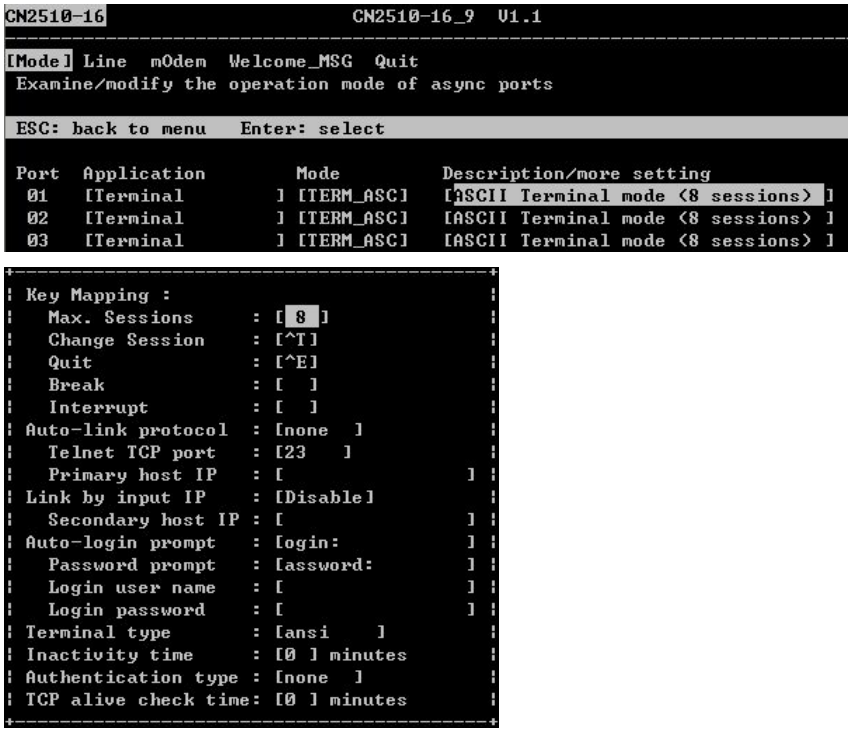




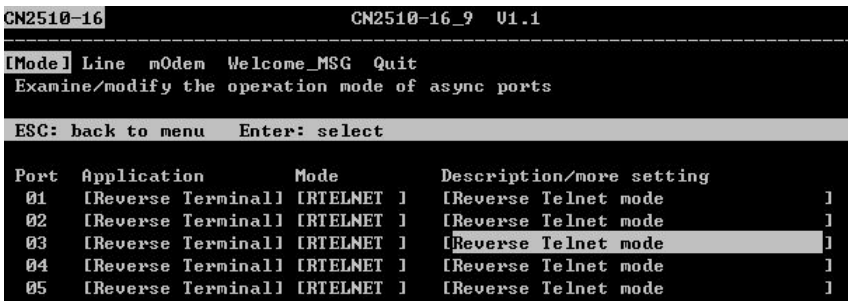
Dial-in/out – PPP/PPPD Mode

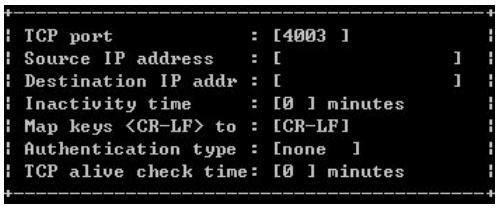


Dial-in/out – TERM_BIN/TERM_ASC Mode



Console Management – RADIUS Settings





Setting up UNIX Hosts

You can use your own RADIUS software to do this. Moxa, however, provides a RADIUS program for UNIX. To use Moxa RADIUS Server, extract radius.2.3.tar from the CN2510 CD. All files are extracted to the /radius2.3 directory.

Installing the RADIUS Execution File

1. Login to the UNIX host and create a directory.

   #mkdir /radius
   #cd radius2.3/bin
2. Mount CD-ROM volume

OS	Command
SCO Open Server	***#mount -f ISO9660, filemode=444 <device>*** Example: #mount-f ISO9660, filemode=444 /dev/cd1/mnt
Solaris x86	In the volume manager mounts the CD-ROM on mount point /cdrom/cdrom0
Linux	#mount /dev/cdrom or #mount-t iso9660-ro mode=0555<device> Example: #mount-t iso9660-ro mode=0555/dev/hdb/mnt

3. Copy file to host.

   #cp /mnt/cdrom/radius.2.3.tar
4. Extract the .tar to files.(radiu.2.3 subdirectory)

   #tar xvf radius.2.3.tar

   After extracting, there are subdirectories, as follows:

   /src: source code

   /conf: configuration

   /log: log record

   /temp: temporary files

   /bin: excution files
5. Compile and link.

   #cd /src
   #sh mk_radius

RADIUS Server Configuration

1. Enter RADIUS administration.

   #cd radius.2.3/bin
   #./radiusadm

2. You will see a welcome message, and then enter RADIUS SERVER administration.

```
M         M    Data Communication Sulotions      Moxa Technologies Co.,LTD
MM       MM     00000     X   X       A          Fl.8,No.6,Alley 6,Lane 235,
M M     M M     0   0      X X       A A         Pao-Chiao Rd.,Shing-Tien City
M  M   M  M     0   0       X       AAAAA        Taipei,Taiwan,R.O.C.
M   M M   M     0   0      X X      A   A        Tel:886-2-9101230
M    M    M     00000     X   X     A   A        Fax:886-2-9101231
                                                 E-mail : support@moxa.com.tw
                                                 WWW : http://www.moxa.com.tw

              +-----------------------------------------+
              | Yes. We build multiport serial solution. |
              +-----------------------------------------+
```

```
+------------------------------------------------------------------------------+
|  MOXA RADIUS SERVER Administration                                           |
+------------------------------------------------------------------------------+
| >Configuration                                                               |
|  Monitor                                                                     |
|  Daemon Control                                                              |
|  Report                                                                      |
|  Others                                                                      |
+------------------------------------------------------------------------------+
|  J:Down K:Up Q:Quit Enter:Select                                             |
+------------------------------------------------------------------------------+
```

3. Specify password file.

   "Configuration"→"Basic Configuration"→Password File
   (/etc/passwd for LINUX)
   (/etc/shadow for SCO UNIX and SOLARIS)
   (/etc/master.passwd fot FREEBSD and BSDI)

```
+------------------------------------------------------------------------------+
|  Basic Configuration                                                         |
+------------------------------------------------------------------------------+
| >Password File : /etc/passwd                                                 |
|  Async Server Administration                                                 |
|  Save & Exit                                                                 |
+------------------------------------------------------------------------------+
```

4. Specify CN2510 IP.

   "Configuration"→"Basic Configuration"→" Async Server Administration"→"Add Async Server"

```
+------------------------------------------------------------------------------+
|  Basic Configuration                                                         |
+------------------------------------------------------------------------------+
|  Password File : /etc/passwd                                                 |
| >Async Server Administration                                                 |
|  Save & Exit                                                                 |
+------------------------------------------------------------------------------+
|  Async Server Administration                                                 |
+------------------------------------------------------------------------------+
| >Add Async Server                                                            |
|  Modify Async Server                                                         |
|  Delete Async Server                                                         |
+------------------------------------------------------------------------------+
|  J:Down K:Up Q:Quit Enter:Select                                             |
+------------------------------------------------------------------------------+
|  Add Async Server                                                            |
+------------------------------------------------------------------------------+
| >IP Address       :                                                          |
|  Name             :                                                          |
|  Console Password :                                                          |
|  Ok                                                                          |
+------------------------------------------------------------------------------+
|  J:Down K:Up Q:Quit Enter:Select                                             |
+------------------------------------------------------------------------------+
```

   IP address: [ ]→ CN2510 IP

   Name: [ ]→CN2510 server name

Console Password:[ ]→CN2510 console password

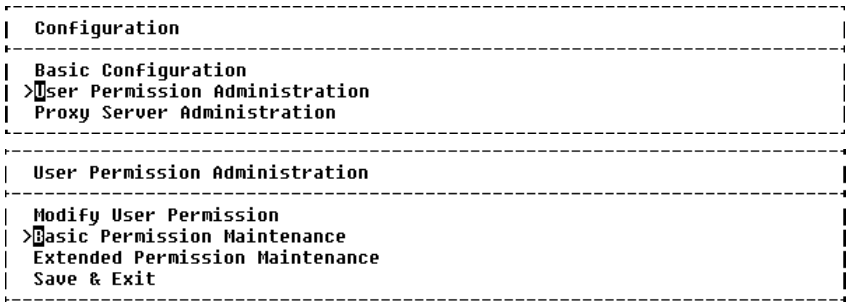
5. Save and exit.

Basic/Extended Permission Group Setting

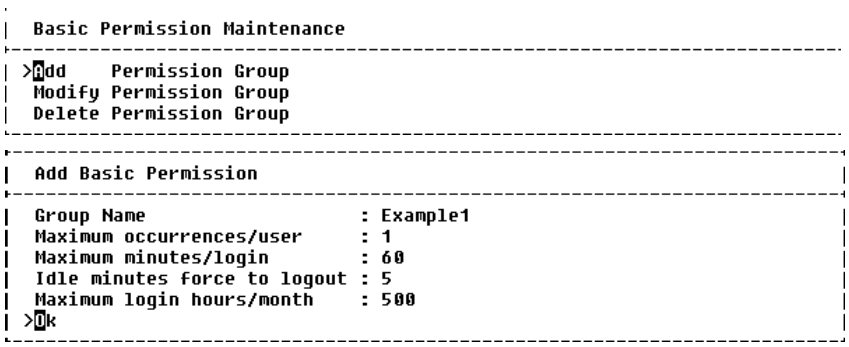
Basic and extended permission group defines regulations for users.

Add/Modify permission group

"Configuration"→"User Permission Administration"→"Basic Permission Maintenance" or "Extended Permission Maintenance"



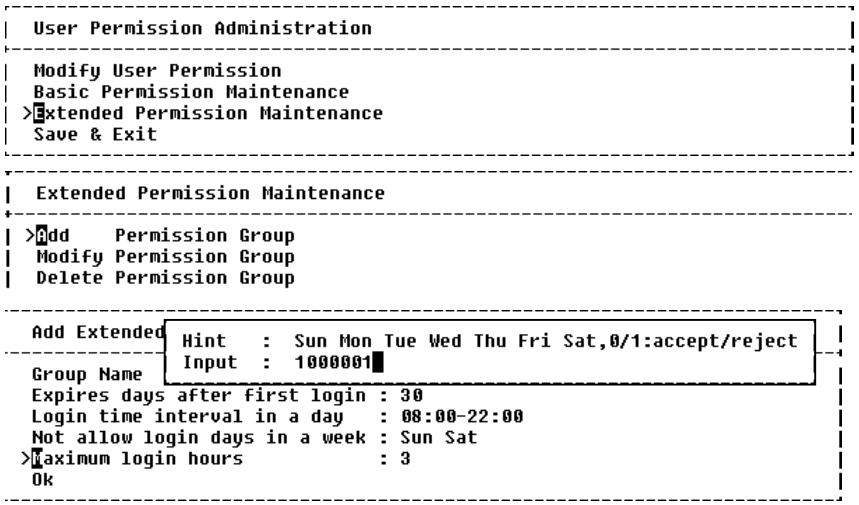
Basic Permission Maintenance



Basic Permission Group	Example	Description
Group Name	Example1	Name of this permission setting
Maximum occurrences/user	1	The user can only login once at the same time. "0" for simultaneous unlimited login sessions
Maximum minutes/login	60	The user has only 60 minutes in each login session "0" for unlimited time
Idle minutes force to logout	5	If the user idles for 5 minutes, the session will be terminated "0" for no kick-out
Maximum login hours/month	500	The user has max. 500 hours per month. "0" means unlimited access

Select **OK** to save.

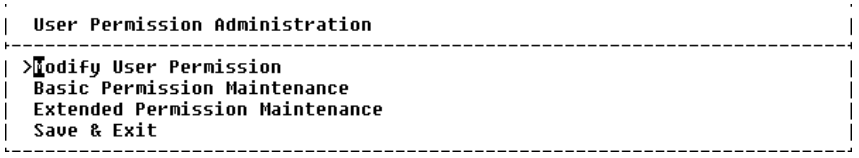
Extended Permission Maintenance



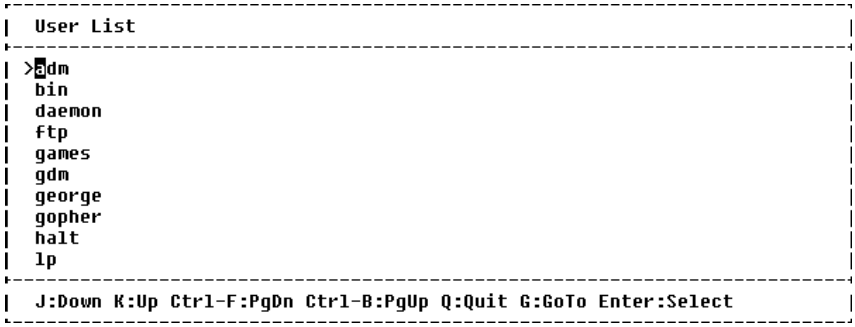
Extended Permission Group	Example	Description
Group Name	Example2	Name of this permission setting
Days to expire after first login	30	The user account expires after 30 days after first login "0" for no expires
Login time interval in a day	08:00-22:00	The user has only 60 minutes in each login session "0" for unlimited 24 hours usage,
Barred login days	Sun Sat	The user is not allowed to login in on Saturday or Sunday. "0" for accept, "1" for reject.
Maximum login hours	500	The user has max. 500 hours for this account. "0" means unlimited access.

Select **OK** to save.

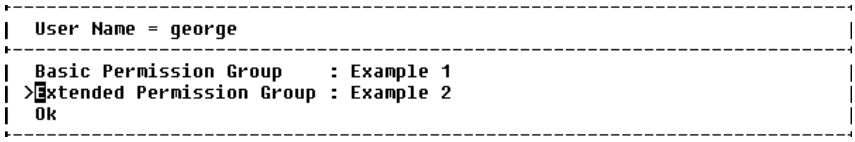
User Settings



"User List" lists all UNIX/LINUX users.



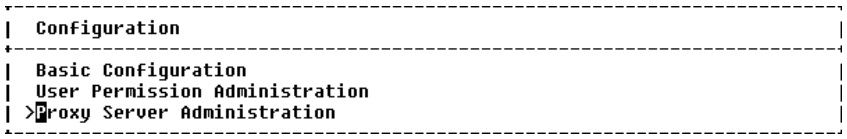
1. Select the user "george" and press [Enter] to modify setting. Press [Ctrl-F] for page down, [Ctrl-B] for page up.
2. Specify basic permission group and extended group for the user "george".

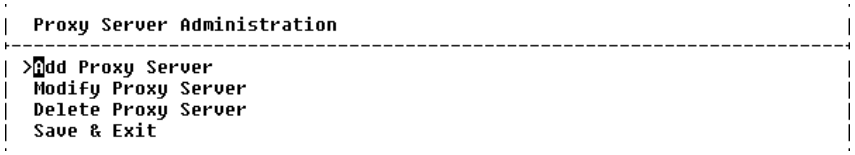


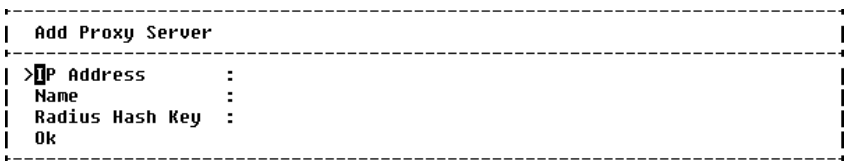
3. Select **OK** to save.

RADIUS proxy

"Configuration"→"Proxy Server Administration"→"Add Proxy Server"







IP address:[ ] →Proxy Server IP

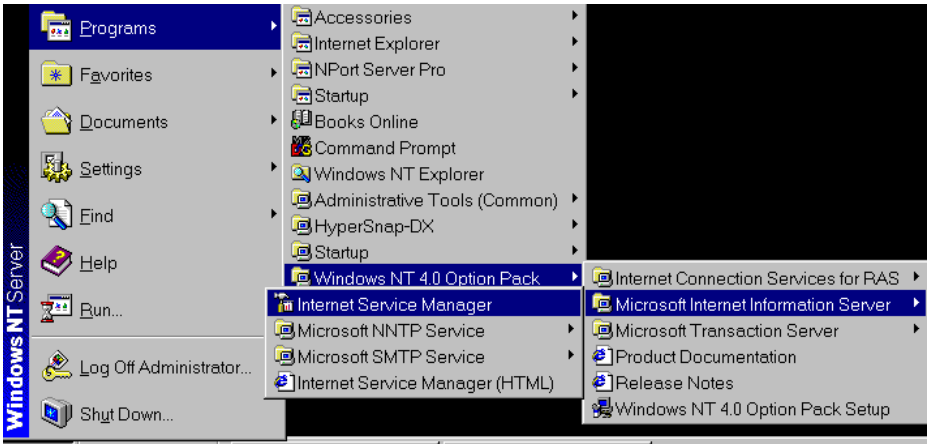
Name: [ ]→ Proxy Server Name

Radius Hash Key:[ ]→ RADIUS encryption key, must be the same key in the proxy server end.

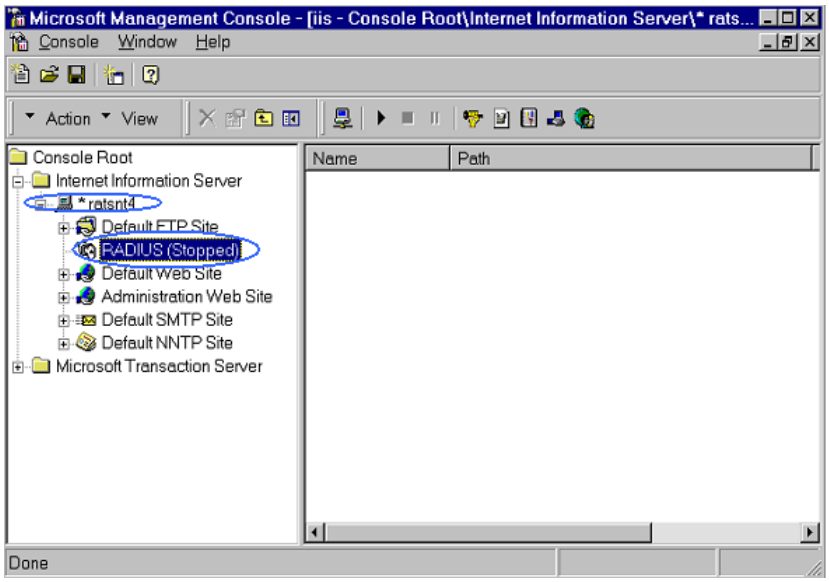
Select "OK" to save.

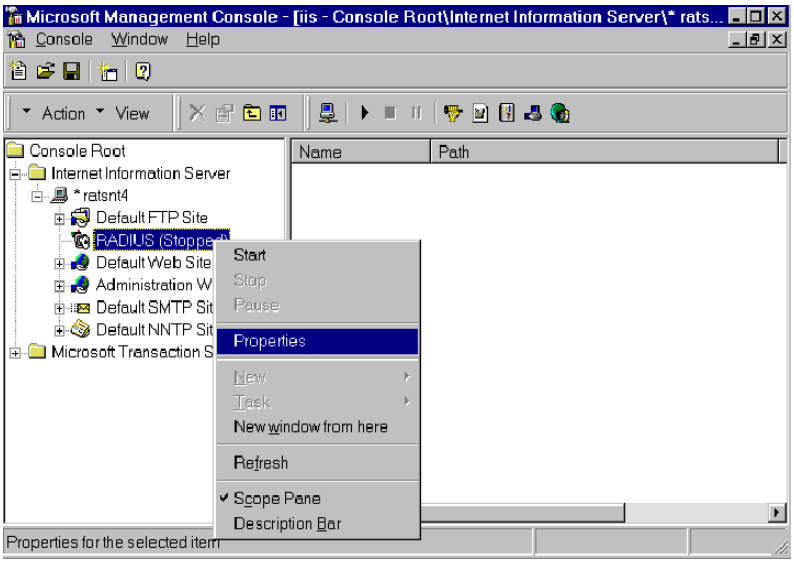
Setting up Windows NT Hosts

1. Install **Windows NT OPTION PACK 4.0** to Windows NT server.
2. "Start"→"programs"→"Windows NT 4.0 Option Pack"→"Microsoft Internet Information Server"→"Management Console Manger".



3. Click "Console Root"→"Internet Information Server" (in the left info window). Your computer's name will be visible.
4. Click "your computer name", after which you will see "RADIUS" in the right info window.





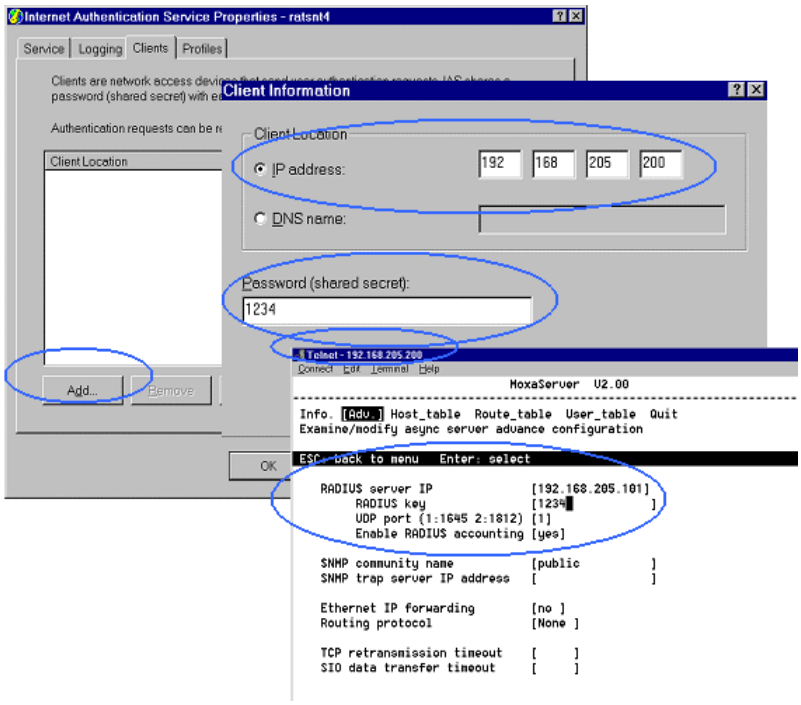
5. Right click on "RADIUS" in the left info window, and then select "properties".
6. Select **Service**. Check the **RADIUS ports**.

   [Authentication] 1645

   [Accounting] 1646

   Enter CN2510 IP address in **IP address** field.

   Enter CN2510 password in **password** field. The password corresponds to the RADIUS key setting in CN2510 Console.



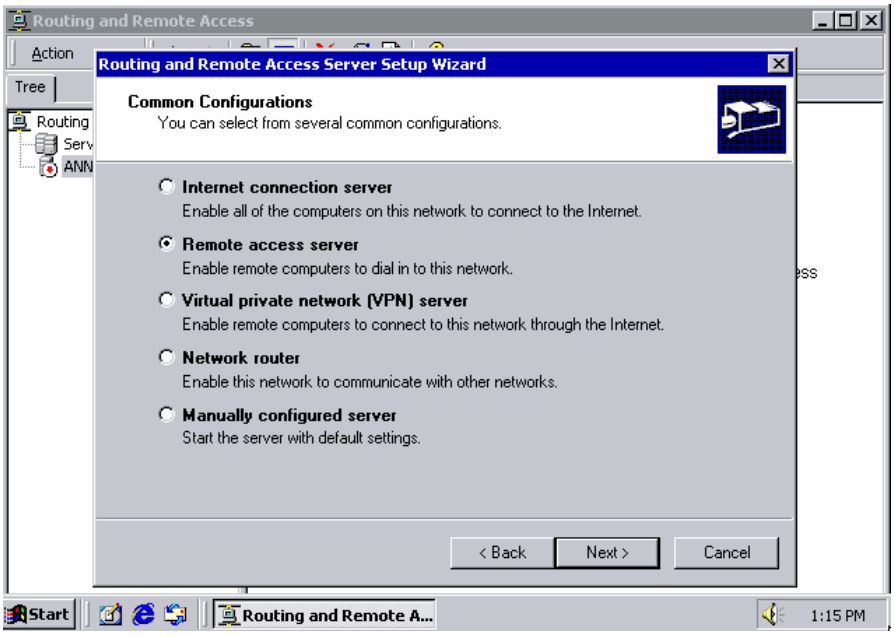
7. Click **Apply**.
8. Right click on **RADIUS** in the left info window. Select **Start**.
9. You will now see that RADIUS is running.

Setting up Windows 2000 Hosts

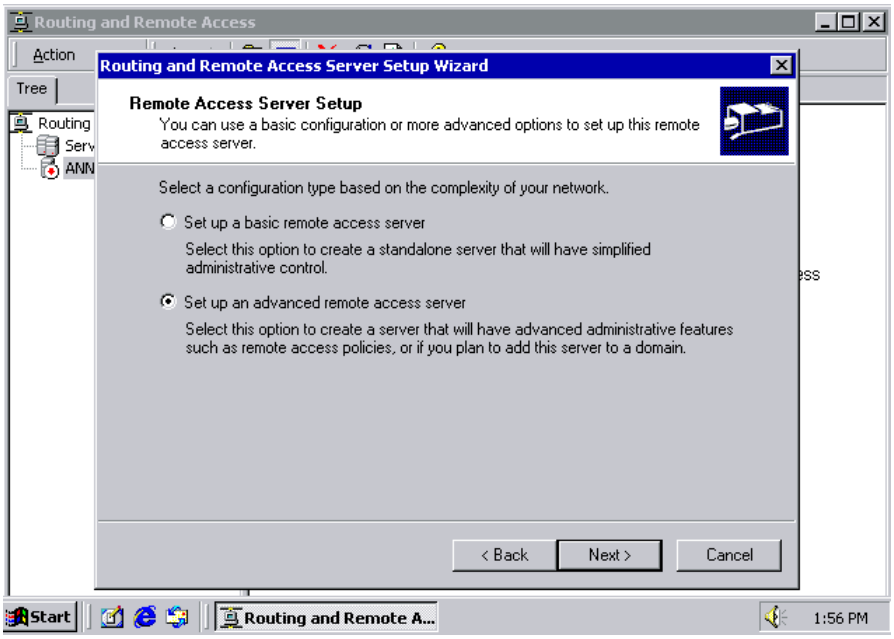
1. Click on Start→Programs→Administrative Tools→Routing and Remote Access.

2. Follow the steps below to install. Right click on **Server (Local)** to select **Configure and Enable Routing and Remote Access**. Click on **Next** to continue.

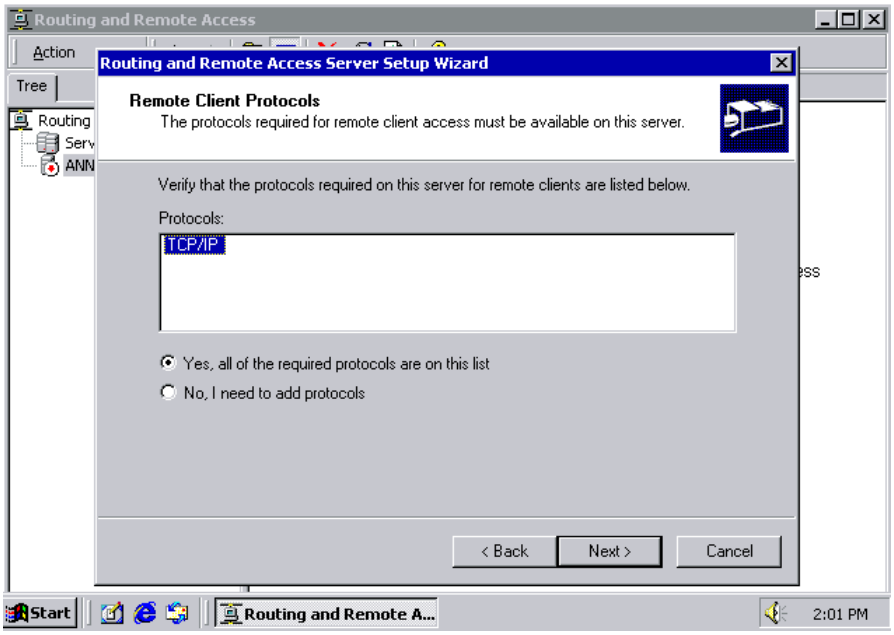
3. Select **Remote access server**, and click on **Next** to continue.



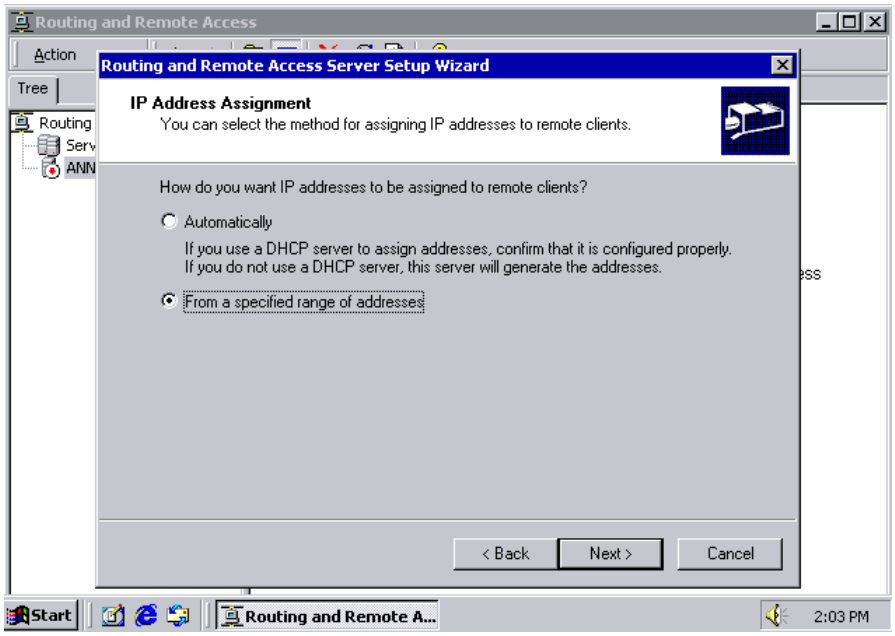
4. Select **Set up an advanced remote access server**, and click on **Next** to continue.

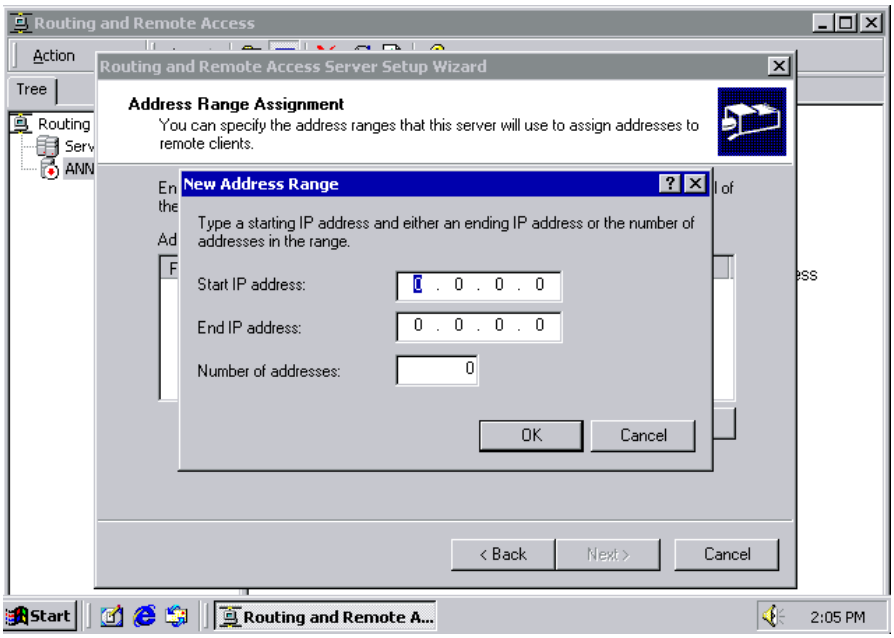


5. Select TCP/IP protocol, and click on Next to continue.

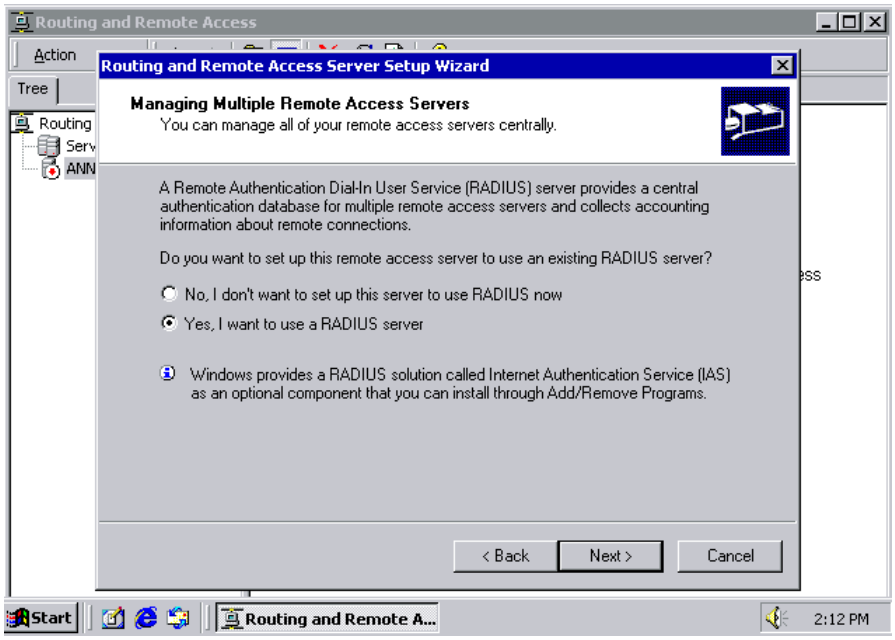


6. Specify an IP address.





7. Select **Yes, I want to use a RADIUS server**, click on **Next** to start using this function.

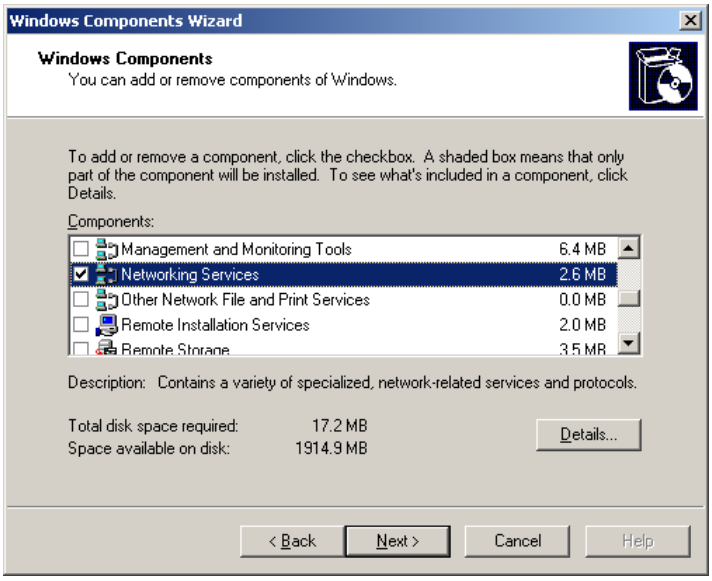


Setting up Windows 2003 Hosts

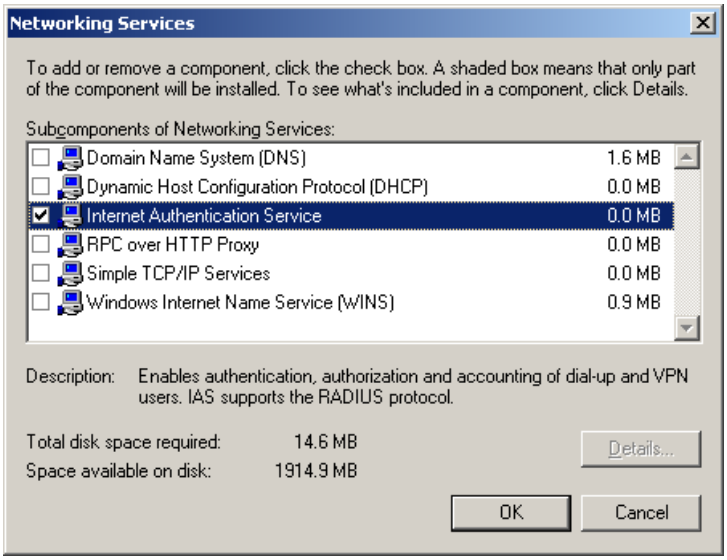
Windows 2003 uses IAS service instead of RADIUS service. For this reason, you need to install IAS service for using RADIUS in Windows 2003 (IAS service will not be installed by default.)

1. Click on **Start→Add or Remove Programs→Add/Remove Windows Components**.

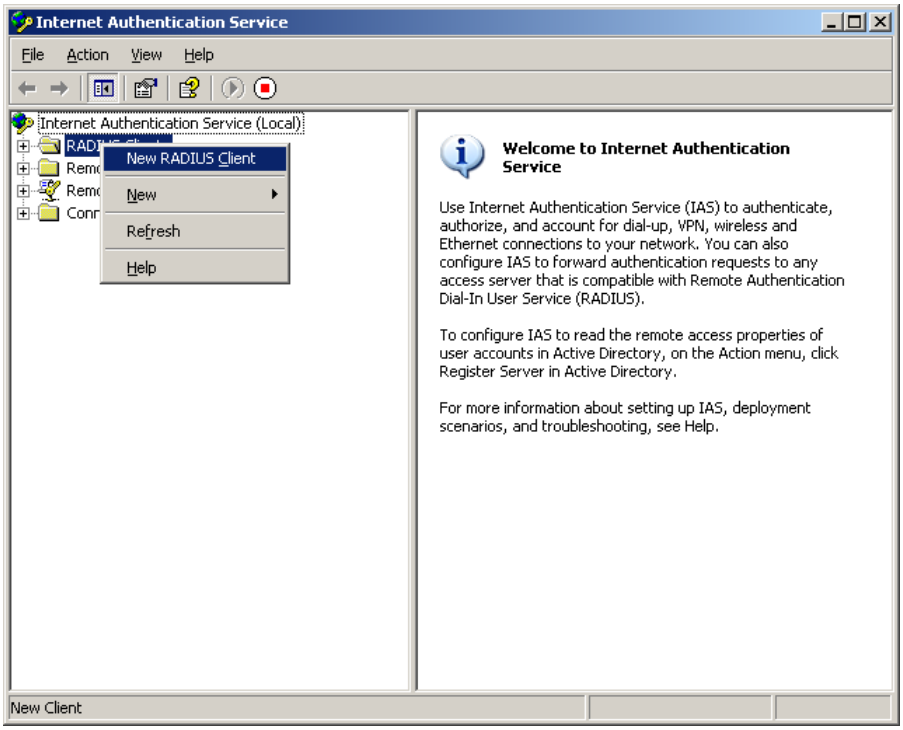
2. When selecting **Windows Components**, select **Network Services**.



3. Select **Details**, and then **Internet Authentication Service**. Click on **OK** to continue until the installation is finished.



4. After the installation is finished, click on **Administrative Tools**, and run **Internet Authentication Service**, and the window shown below will open.



5. Select **NEW RADIUS Client** to add new RADIUS client, and then you can start using this function.

C

SNMP Agent with MIB II

CN2510 has a built in Simple Network Management Protocol agent software. It supports cold/warm start trap, line up/down trap and RFC 1213 MIB-II. The following table lists the standard MIB-II group, as well as the variable implementation for CN2510.

Supported SNMP variables

System MIB	Interfaces MIB	IP MIB	ICMP MIB
SysDescr	itNumber	ipForwarding	IcmpInMsgs
SysObjectID	ifIndex	ipDefaultTTL	IcmpInErrors
SysUpTime	ifDescr	ipInreceives	IcmpInDestUnreachs
SysContact	ifType	ipInHdrErrors	IcmpInTimeExcds
SysName	ifMtu	ipInAddrErrors	IcmpInParmProbs
SysLocation	ifSpeed	ipForwDatagrams	IcmpInSrcQuenchs
SysServices	ifPhysAddress	ipInUnknownProtos	IcmpInRedirects
	ifAdminStatus	ipInDiscards	IcmpInEchos
	ifOperStatus	ipInDelivers	IcmpInEchoReps
	ifLastChange	ipOutRequests	IcmpInTimestamps
	ifInOctets	ipOutDiscards	IcmpTimestampReps
	ifInUcastPkts	ipOutNoRoutes	IcmpInAddrMasks
	ifInNUcastPkts	ipReasmTimeout	IcmpOutMsgs
	ifInDiscards	ipReasmReqds	IcmpOutErrors
	ifInErrors	ipReasmOKs	IcmpOutDestUnreachs
	ifInUnknownProtos	ipReasmFails	IcmpOutTimeExcds
	ifOutOctets	ipFragOKs	IcmpOutParmProbs
	ifOutUcastPkts	ipFragFails	IcmpOutSrcQuenchs
	ifOutNUcastPkts	ipFragCreates	IcmpOutRedirects
	ifOutDiscards	ipAdEntAddr	IcmpOutEchos
	ifOutErrors	ipAdEntIfIndex	IcmpOutEchoReps
	ifOutQLen	ipAdEntNetMask	IcmpOutTimestamps
	ifSpecific	ipAdEntBcastAddr	IcmpOutTimestampReps
		ipAdEntReasmMaxSize	IcmpOutAddrMasks
		IpNetToMediaIfIndex	IcmpOutAddrMaskReps
		IpNetToMediaPhysAddress	
		IpNetToMediaNetAddress	
		IpNetToMediaType	
		IpRoutingDiscards	

UDP MIB	TCP MIB	SNMP MIB
UdpInDatagrams	tcpRtoAlgorithm	snmpInPkts
UdpNoPorts	tcpRtoMin	snmpOutPkts
UdpInErrors	tcpRtoMax	snmpInBadVersions
UdpOutDatagrams	tcpMaxConn	snmpInBadCommunityNames
UdpLocalAddress	tcpActiveOpens	snmpInASNParseErrs
UdpLocalPort	tcpPassiveOpens	snmpInTooBigs
	tcpAttempFails	snmpInNoSuchNames
Address Translation MIB	tcpEstabResets	snmpInBadValues
AtIfIndex	tcpCurrEstab	snmpInReadOnlys
AtPhysAddress	tcpInSegs	snmpInGenErrs
AtNetAddress	tcpOutSegs	snmpInTotalReqVars
	tcpRetransSegs	snmpInTotalSetVars
	tcpConnState	snmpInGetRequests
	tcpConnLocalAddress	snmpInGetNexts
	tcpConnLocalPort	snmpInSetRequests
	tcpConnRemAddress	snmpInGetResponses
	tcpConnRemPort	snmpInTraps
	tcpInErrs	snmpOutTooBigs
	tcpOutRsts	snmpOutNoSuchNames
		snmpOutBadValues
		snmpOutGenErrs
		snmpOutGetRequests
		snmpOutGetNexts
		snmpOutSetRequests
		snmpOutGetResponses
		snmpOutTraps
		snmpEnableAuthenTraps

D

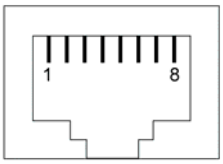
Pin Assignments and Cable Wiring

- **Pin Assignments**
  - 10/100BaseTX Port Pin Assignment
  - Console Port Pin Assignment
  - Async RS-232 Port Pin Assignment
- **Cable Wiring**
  - 10/100BaseTX Port Cable Wiring
  - Async RS-232 Port Cable Wiring
  - DB9 amd DB25 Connector Pin Assignment

Pin Assignments

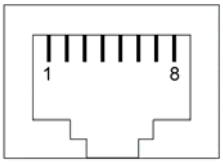
10/100BaseTX Port Pin Assignment

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-



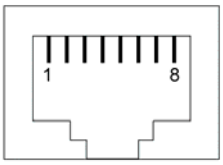
Console Port Pin Assignment

Pin	RS-232
1	DSR (in)
2	RTS (out)
3	GND
4	TxD (out)
5	RxD (in)
6	DCD (in)
7	CTS (in)
8	DTR (out)



Async RS-232 Port Pin Assignment

Pin	RS-232
1	DSR (in)
2	RTS (out)
3	GND
4	TxD (out)
5	RxD (in)
6	DCD (in)
7	CTS (in)
8	DTR (out)

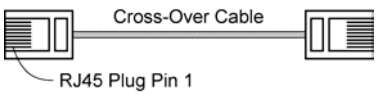


Cable Wiring

10/100BaseTX Port Cable Wiring

Cable Wiring

3	3
6	6
1	1
2	2

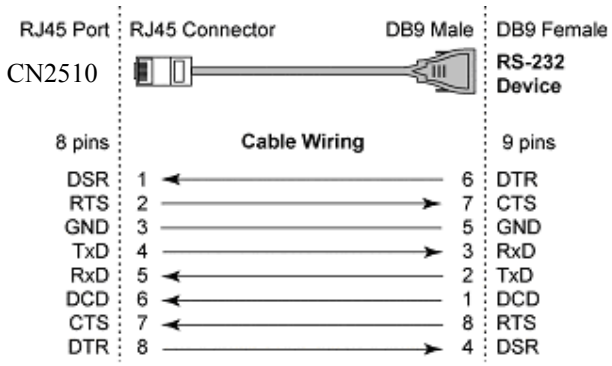


Cable Wiring

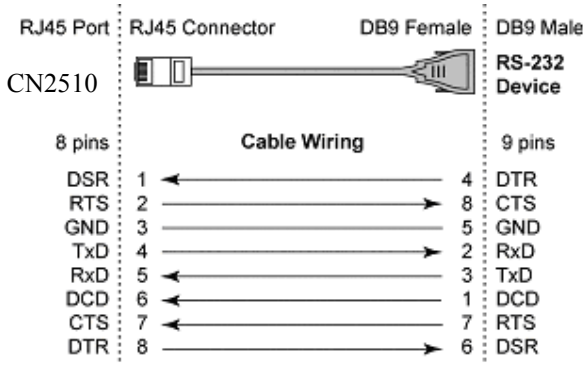
3	1
6	2
1	3
2	6

Async RS-232 Port Cable Wiring

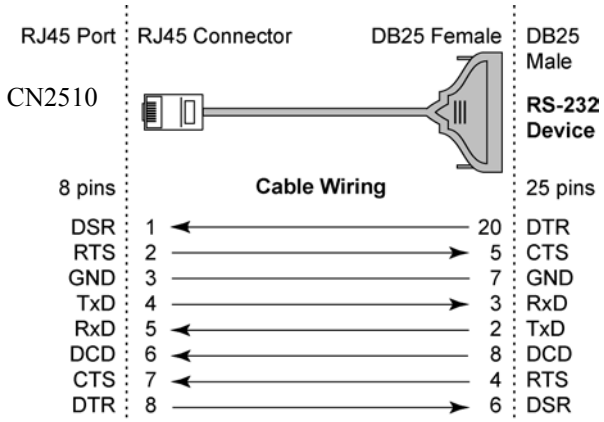
RJ45 (8 pins) to DB9 Male for CN2510



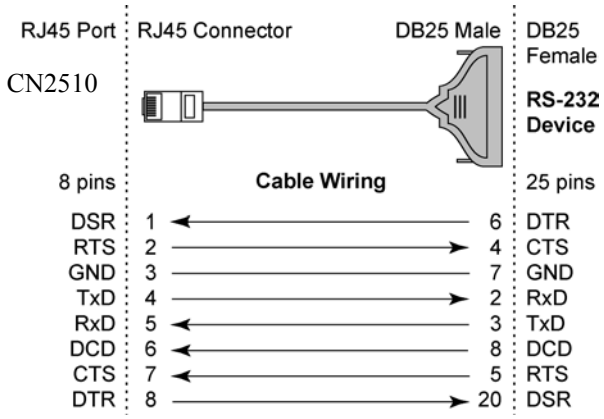
RJ45 (8 pins) to DB9 Female for CN2510



RJ45 (8 pins) to DB25 Female for CN2510



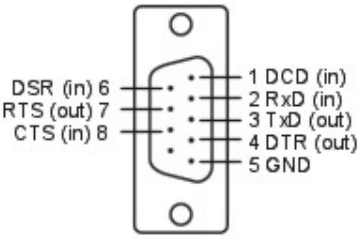
RJ45 (8 pins) to DB25 Male for CN2510



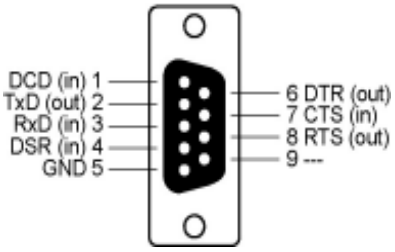
DB9 and DB25 Connector Pin Assignment

DB9 Connector Pin Assignment

DB9 Male Connector

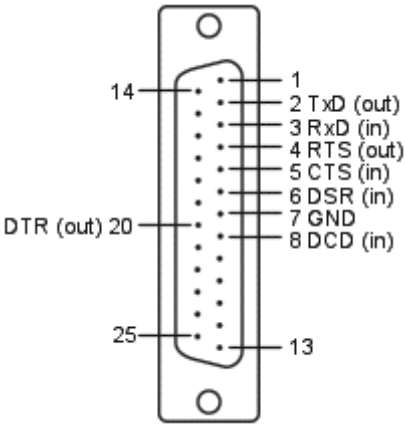


DB9 Female Connector

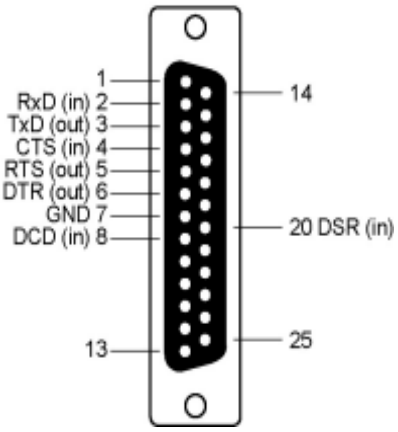


DB25 Connector Pin Assignment

DB25 Male Connector



DB25 Female Connector



E

LCM Display

We recommend using LCM display and four push buttons to configure the IP address at the first time installation.

Basic Operation

If the CN2510 is working properly, the LCM panel will display a green color. The red Ready LED will also light up, indicating that the CN2510 is receiving power. After the red Ready LED turns to green, you will see a display similar to:

C	N	2	5	1	0	-	1	6	_	0	3				
1	9	2	.	1	6	8	.	1	2	7	.	2	5	4	

This is where

- CN2510-16 is the CN2510's name
- 03 is the CN2510's serial number
- 192.168.127.254 is the CN2510's IP address

There are four push buttons on CN2510's nameplate. Going from left to right, the buttons are:

Button	Name	Action
MENU	menu	activates the main menu, or returns to an upper level
△	up cursor	scrolls up through a list of items shown on the LCM panel's second line
▽	down cursor	scrolls down through a list of items shown on the LCM panel's second line
SEL	select	selects the option listed on the LCM panel's second line

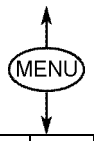
The buttons are manipulated in a manner similar to the way a modern cellular phone operates. As you move through the various functions and setting options, note that the top line shows the current menu or submenu name, and the bottom line shows the submenu name or menu item which is activated by pressing the SEL button.

Detailed Menu Options

The best way to explain all of CN2510's LCM functions is to refer to the tree graph shown in the next page. There are three main levels—1, 2, and 3—with each level represented by a separate column.

The first thing to remember is that the MENU button is used to move back and forth between the LCM panel's default screen, and main menu screen:

C	N	2	5	1	0	-	1	6	_	0	3				
1	9	2	.	1	6	8	.	1	2	7	.	2	5	4	



M	a	i	n		M	e	n	U							
S	e	r	v	e	r		s	e	t	t	i	n	g		↓

In addition, you only need to remember to:

- Use the SEL button to move up one level (i.e., left to right on the tree graph)
- Use the MENU button to move down one level (i.e., right to left on the tree graph)
- Use the cursor keys, △ and ▽, to scroll between the various options within a level (i.e., up and down on the tree graph).

As you use the buttons to operate the LCM display, you will notice that with very few exceptions, moving up one level causes the bottom line of the display to move to the top line of the display. You will also notice that the bottom three options in level 2, and all of the options in level 3 have either a C or D attached.
The meaning is as follows:

- C = configurable
  I.e., you are allowed to change the setting of this option
- D = display only
  I.e., the setting for this option is displayed, but it cannot be changed (this does NOT necessarily mean that the number doesn't change; only that you can't change it)

Main Menu			
	Server setting	Serial number	*D*
		Server name	*C*
		Firmware ver	*D*
		Model name	*D*
	Network setting	Ethernet status	*D*
		MAC address	*D*
		IP config	*C*
		IP address	*C*
		Netmask	*C*
		Gateway	*C*
		DNS server 1	*C*
		DNS server 2	*C*
	Serial set	Select port	*C*
		Baud rate	*C*
		Data bit	*C*
		Stop bit	*C*
		Parity	*C*
		Flow control	*C*
		Tx/Rx fifo	*C*
		Interface	*C*
		Tx/Rx bytes	*D*
		Line status	*D*

The part of the LCM operation that still requires some explanation is how to edit the configurable options. In fact, you will only encounter two types of configurable options.

The first type involves entering numbers, such as IP addresses, Netmasks, etc. In this case, you change the number one digit at a time. The up cursor (△) is used to decrease the highlighted digit, the down cursor (▽) is used to increase the highlighted digit, and the sel button is used to move to the next digit. When the last digit has been changed, pressing sel simply enters the number into CN2510's memory.

The second type of configurable option is when there are only a small number of options from which to choose (although only one option will be visible at a time). Consider the Parity attribute under Serial set as an example. Follow the tree graph to arrive at the

following Parity screen. The first option, None, is displayed, with a down arrow all the way to the right. This is an indication that there are other options from which to choose.

P	a	r	i	t	y										
N	o	n	e												↓

Press the down cursor button once to see Odd as the second option.

P	a	r	i	t	y										↑
O	d	d													↓

Press the down cursor button again to see Even as the third option.

P	a	r	i	t	y										↑
E	v	e	n												↓

Press the down cursor button again to see Space as the fourth option.

P	a	r	i	t	y										↑
S	p	a	c	e											↓

Press the down cursor button yet again to see the last option, Mark.

P	a	r	i	t	y										↑
M	a	r	k												

To choose the desired option, press the SEL button when the option is showing on the screen.

F

Service Information

This appendix shows you how to contact Moxa for information about this and other products, and how to report problems.

In this appendix, we cover the following topics.

- **MOXA Internet Services**
- **Problem Report Form**
- **Product Return Procedure**

MOXA Internet Services

Customer satisfaction is our number one concern, and to ensure that customers receive the full benefit of our products, Moxa Internet Services has been set up to provide technical support, driver updates, product information, and user's manual updates.

The following services are provided

E-mail for technical support ..... support@moxa.com.tw

World Wide Web (WWW) Site for product information:

..... http://www.moxa.com

Problem Report Form

MOXA CN2510 Series

Customer name:	
Company:	
Tel:	**Fax:**
Email:	**Date:**

1. **Moxa Product:** ☐ CN2510-8 ☐ CN2510-16 ☐ CN2510-8-48V ☐ CN2510-16-48V
2. **Serial Number:** _____

Problem Description: Please describe the symptoms of the problem as clearly as possible, including any error messages you see. A clearly written description of the problem will allow us to reproduce the symptoms, and expedite the repair of your product.

Product Return Procedure

For product repair, exchange, or refund, the customer must:

- Provide evidence of original purchase.
- Obtain a Product Return Agreement (PRA) from the sales representative or dealer.
- Fill out the Problem Report Form (PRF). Include as much detail as possible for a shorter product repair time.
- Carefully pack the product in an anti-static package, and send it, pre-paid, to the dealer. The PRA should be visible on the outside of the package, and include a description of the problem, along with the return address and telephone number of a technical contact.